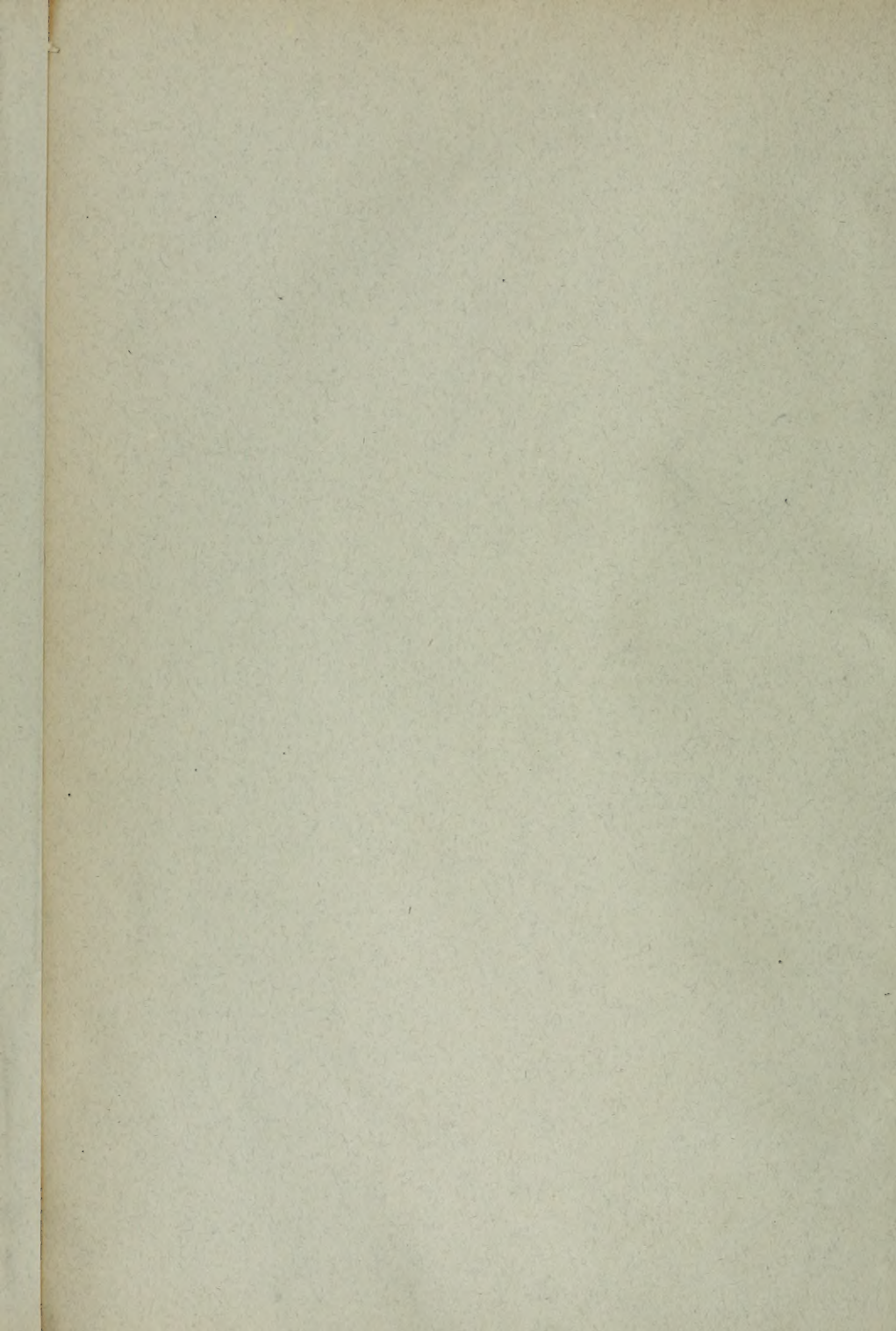





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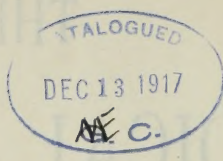
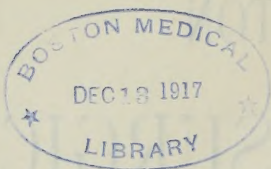
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ABSTRACTORS OF CURRENT
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INDEX TO VOLUME CLXXVI.

AUTHORS.

A

- Adams, Lester.** A case of melanotic sarcoma arising in the eye, with metastases; autopsy findings, 768;
A case of amebic abscess of the liver in a guardsman recently returned from the Mexican border, 808.
Anderson, V. V. Feeble-mindedness as seen in court, 123; Drug users in court, 755.
Anthony, Francis W. The proposed health insurance legislation, 431.
Armstrong, D. B. The Framingham health and tuberculosis demonstration, 206.
Austin, A. Everett. Treatment of pain and distress in digestive disorders, 357.

B

- Balbani, Gerardo M., and Davis, Lincoln.** A study of 29 cases of echinococcus disease at the Massachusetts General Hospital, 726.
Barach, Joseph H. Diabetes mellitus and syphilis, 58.
Bates, Everett A. Thoughts on the treatment of pneumonia, 232.
Benedict, A. L. Cancer occurring in acid parts of the body, 172.
Bishop, Louis Faugeres. Arteriosclerosis, with special reference to diet, 721.
Blaisdell, J. Harper, and Cunningham, A. R. Report of a case of congenital alopecia, 210.
Blaisdell, J. Harper, and Burns, Frederick S. The use of radium in the treatment of cutaneous epithelioma and keratosis senilis, 774.
Blake, Allen H. A case report, 356.
Blake, J. B., and Lahey, F. H. Progress of surgery, 1916, 313.
Blake, John Baptist. Infection of simple closed fractures, 628.
Bottomley, John T. Some recent experiences in gastric and duodenal surgery, 629.
Bowen, John T. A further word on the sterilization treatment of furunculosis, 96.
Brackett, E. G. The application of the median palpebral incision for a knee arthrotomy, 152.
Briggs, L. Vernon. A study of the problem of the so-called defective delinquent and what has been done in Massachusetts, 371.
Bucholz, C. H., Danforth, M. S., Souther, Robert, Low, H. C., and Ossgood, R. B. Twelfth report of progress in orthopedic surgery, 844.
Burns, Frederick S., and Blaisdell, J. Harper. The use of radium in the treatment of cutaneous epithelioma and keratosis senilis, 774.

C

- Cannon, Walter B.** The physiological factors concerned in surgical shock, 859.
Carlisle, Frank H. The drug treatment of morphinism, 209.
Carro, H. The incidence of intestinal adhesions as a factor in chronic intestinal stasis in the epilepsies, 697.
Chamberlain, Major. History of military medicine and its contributions to science, 479.
Champion, Merrill E. The practicing physician and the public health, 840.
Cheever, David. Gastro-jejunostomy under local anesthesia in the two-stage operation in gastric surgery, 632.
Churchman, John W. A group of injuries in modern warfare, 113.
Chute, Arthur L. The management of operative cases presenting urinary back pressure, 155.
Clark, W. Irving. Physical examination and medical supervision of factory employees, 249; Nail uncture grounds of the foot; results in 100 cases, 541.
Cobb, Carolus M. An anatomical factor as a cause of pyorrhea, 95.
Codman, E. A. A wise preliminary to the adoption of any compulsory health insurance act, 435.
Cornat, Isador H. The sensory evidence of nerve regeneration, 192.
Cunningham, John H., Jr. Seminal vesiculitis and prostatitis treated by vesiculotomy and prostatic drainage, 422.
Cunningham, A. R., and Blaisdell, J. Harper. Report of a case of congenital alopecia, 210.

D

- Dabney, Virginius.** Some conditions leading to incorrect diagnosis of adenoids in children, 875.

- Danforth, M. S., Souther, Robert, Bucholz, C. H., Low, H. C., and Ossgood, R. B.** Twelfth report of progress in orthopedic surgery, 844.
Davis, Lincoln. Personal experience with carcinoma of the cervix, 660.
Davis, Lincoln, and Balbani, Gerardo M. A study of 29 cases of echinococcus disease at the Massachusetts General Hospital, 726.
Davis, Michael M., Jr. The beneficial results of prenatal work, 5.
Deaver, John B. The principles underlying the surgery of the pancreas, 187.
Decker, H. Ryerson. The recognition of pancreatic insufficiency, with special reference to the Loewi test, 367.
Devine, William H. Comparative statistics on physical examinations of pupils of Boston public schools from December 1, 1915, to April 1, 1917, 773.
Donoghue, Francis D. Medical services and medical and hospital fees under workmen's compensation, 235; Specific payments under the workmen's compensation act, 671.
Dresser, Frank F. The fallacious social philosophy of health insurance, 244.
Duel, Arthur B. Suppurative labyrinthitis: a critical review of its diagnosis and treatment, 345.
Duff, John, Jr. Demonstration of bone wiring instruments, 636.

E

- Emerson, Edward Waldo.** William Palmer Bolles, 362.
Emerson, Ernest B. Mental states responsible for malingering, 736.
Emerson, Haven. The duty of the health departments in the alcohol question, 77.
Enebuske, Cies J. On vasomotor unrest in the insane: studies based on 20,000 measurements of the tension of the radial pulse in 250 cases of various forms of insanity, 385.
Erdos, Theodore, and Kaudon, Arthur. A metabolism study of a case of leukemia during radium treatment, 503.

F

- Fairbanks, Arthur Willard.** The neurological aspects of food poisoning, 413.
Farnell, Frederic J., and Starr, Samuel. Systemic idiomyeliosis: with manifestations in central nervous system, 771.
Fernald, Guy G. An improved venipuncture needle, 173.
Field, Martin T. Obliteration of liver dulness in acute perforation of the stomach and duodenum, with case reports, 60.
Fischbein, Louis. Remarks on the diagnosis and treatment of gastric ulcer, 465.
Frost, H. M. Trench-foot, 301.

G

- Gage, Homer, and Hunt, Ernest L.** Hypertrophic ileocecal tuberculosis, 253.
Genhart, Frank C. Report of a dietary study of St. Paul's School, Concord, New Hampshire, 17.
Gile, John Martin. Comparative results in suprapubic and perineal prostatectomies, 589.
Graves, William P. Division of the ureter in pelvic operations, 149.
Greeley, Horace. The cause of poliomyelitis, 540.
Grege, Donald. Fundamental considerations in the treatment of the psychoneuroses, 57.

H

- Haberman, J. Victor.** Shifting, charlatan and vagabond: who they are and how they arise, 757.
Hare, C. H. Two cases of leiomyosarcoma, 901.
Harmer, Torr Wagner. Appendicitis, 165.
Harrison, Anthony B. Lipoma of the intestine, 535.
Hawes, John B., 2d. "Constitutional" versus "local" signs and symptoms in the diagnosis of early pulmonary tuberculosis, 307.
Hedblom, Carl A. On disease incidence in China, 530.
Hektorn, Ludvig. Recent investigations on the bacteriology of acute poliomyelitis, 687.
Hough, Garry De N. Diagnosis of extrauterine pregnancy, 524.
Hudnut, Paul A. Mouth infections in their relation to systemic disease, 695.
Hunt, Ernest L., and Gage, Homer. Hypertrophic ileocecal tuberculosis, 253.
Hunt, Ernest L., and Mills, Ora M. Some experience bearing on the medico-legal value of the precipitin test for human blood, 48.

J

- Jackson, Henry. Abdominal pain, 1.
 Jarrett, Mary C. Possibilities in social service for psychopathic patients, 201.
 Johnson, Peter F. Right colectomy, with special reference to the end results of a series of twelve cases, 266.

K

- Keefe, John W. The advantages of conservative surgery in operations for diverticulitis of the descending and pelvic colon, 271.
 Kellogg, Foster S. Adenomyoma of the recto-vaginal septum, 22.
 Kimpton, A. R. Shockless surgery, paravertebral anesthesia with scopolamine and narcophine: a preliminary report, 248.
 Knudson, Arthur, and Erdos, Theodore. A metabolism study of a case of leukemia during radium treatment, 503.
 Konrad, Frank C. W. Paravertebral anesthesia, 351.

L

- Laher, Frank H. Thyroid abscess: (with mention of two new signs of this condition), 94; Resection of the descending colon and rectum, 275; Intrathoracic goitre, 341.
 Laher, F. H., and Blake, J. B. Progress of surgery, 1916, 313.
 Lane, John E. Ringworm of the scalp and alopecia areata appearing simultaneously in the same location, 65.
 Lane, John W. A report of an unusual case of umbilical hernia, 64; Ileostomy for ileus and general peritonitis, 304.
 Lapham, Mary E. Three types of tuberculosis, 755.
 Larrabee, Ralph C. The treatment of pernicious anemia, 553.
 Leavitt, Peirce Henry. Successful use of internal splints in a septic compound fracture, 311.
 Lewis, D. M. The epidemiology of anterior polymyositis epidemica, 1916, 234; A laboratory aid in the diagnosis of scarlet fever, 170; observations on measles, 742.
 Lewis, Miss Ora Mabelle. What the state is doing for the syphilitic at the State Infirmary at Tewksbury, Mass., based on a survey on syphilis and gonorrhea at the State Infirmary, 380.
 Lindsey, John H. X-ray follow-up report of seventeen cases of pyrorectomy for ulcer, 80.
 Little, John W., Jr. An Eskimo "deficiency disease," 645.
 Little, Seelye W. A case of aspermia, 355.
 Lovett, Robert W. The Harvard Infantile Paralysis Commission and its work in Massachusetts, 62.
 Low, H. C., Danforth, M. S., Souther, Robert, Bucholz, C. H., and Osgood, R. B. Twelfth report of progress in orthopedic surgery, 844.
 Lower, Lawson G. Some unusual conditions observed in 245 post-mortem examinations at Danvers State Hospital, 872; On cranial measurements of persons dying in insane hospitals, 899.

M

- Mackay, Edward H. A case of tubal pregnancy, 808.
 Marshall, Herman W. Results of treatments for fractures of carpal bones, 323.
 Martin, John F. Morphine-atropine, pituitrin and ether in obstetrics, 310.
 Mason, Nathaniel R. Vaginal delivery after Caesarean section, 127.
 McCoy, George W. The public health aspects of leprosy, 43.
 McGurn, William J. Chronic carbon monoxide inhalation and some of its untoward results, 231.
 Miller, Lester C. Treatment of perforated ulcer of the stomach with the duodenal feeding tube, 97.
 Mills, Ora M., and Hunt, Ernest L. Some experience hearing on the medico-legal value of the precipitin test for human blood, 48.
 Mixer, Samuel J. Inaugural meeting, Boston, October 5-7, 1916, presidential address, 111.
 Mixer, William Jason. Tumors of the spine and cord, 452.
 Morrison, William Reid. An improved blood transfusion tube, 468.

N

- Neff, Irwin H. Inebriety from a medical viewpoint, 204; Inebriety and how to control it, 337.
 Neuhoef, Harold, and Wolf, Heinrich Franz. Concerning the end-results of treatment of fracture of the elbow, 723.

O

- Olmsted, J. M. D., and Wodehouse, R. P. Preparation of vegetable proteins for anaphylactic tests, 467.

- O'Neill, R. F. Clinical observations on 331 cases presenting symptoms of nephrolithiasis, 623.
 Orday, Thomas. Remissions in leukemia produced by radium in cases completely resistant to x-ray and benzol treatment, 490.
 Osgood, R. B., Danforth, M. S., Souther, Robert, Bucholz, C. H., and Low, H. C. Twelfth report of progress in orthopedic surgery, 844.

P

- Packard, Horace. A wonderful provision of nature for drainage of a pelvic abscess; evolution of an ad-ventitious drainage tube, 807.
 Peabody, Francis W. A report of the Harvard Infantile Paralysis Commission on the diagnosis and treatment of acute cases of the disease during 1916, 637.
 Peckham, Frank E. A case of congenital dislocation of the shoulder joint, 355.
 Pemberton, Frank A. A large ovarian tumor, 354.
 Phipps, Cadis. Pulmonary syphilis: with the report of a probable case, 390.
 Polak, John Osborn. Obstetric advances, including anesthesia, the use and abuse of pituitrin, extra-peritoneal Caesarean section, pubiotomy and the significance of funnel pelvis, 85.
 Porter, W. T. Fat embolism a cause of shock, 248; Respiratory suction aid in surgical shock, 699.
 Powers, George H. Report of a case of congenital anomaly of the larynx, 343.
 Pratt, Joseph H. Results obtained by the class method of home treatment in pulmonary tuberculosis during a period of ten years, 13.
 Preble, William E. Intestinal toxemia and sequelae, 286.
 Preun, Joseph. An interesting tonsil, 249.

R

- Reid, William Duncan. Variations in pulmonary voice sounds, 601.
 Richardson, Edward P. Acute and subacute perforations of the stomach and duodenum at the Massachusetts General Hospital, 158; Jejunal ulcer: a report of two cases treated by resection and end-to-end anastomosis of the jejunum, 118.
 Rodman, J. S. Gastric and duodenal ulcers, 834.
 Rossy, Cecil S., and Yerkes, Robert M. A point scale for the measurement of intelligence in adolescence and adult individuals, 564.
 Rushmore, Stephen. Progress in gynecology, 700.

S

- Seelie, Ralph H. Extrauterine pregnancy, 595.
 Shetuck, George C. Variations in pulmonary resonance, 599.
 Sheldon, Russell F. A study of the x-rays of cases of fracture of the long bones at the Massachusetts General Hospital, 61.
 Shen, S. J. Fibroma of mediastinum: report of a case, 53.
 Simmons, Channing C. The treatment of osteomyelitis, 653.
 Smith, George Gilbert. Renal stone, 524.
 Smith, Herbert L. The coefficient of safety in surgical operations, 88; A method of supporting the bladder in certain cases of cystocele, 591.
 Sobotky, Irving. A case of iritis and optic neuritis following tonsillitis, 806.
 Soper, Horace W. The mucosa of the rectum and sigmoid colon as a focus of infection, 766.
 Souther, Robert, Danforth, M. S., Bucholz, C. H., Low, H. C., Osgood, R. B. Twelfth report of progress in orthopedic surgery, 844.
 Starr, Samuel, and Farnell, Frederic J. Systemic osteomyelitis: with manifestations in central nervous system, 771.
 Stearns, A. Warren. Defectives in our prisons, 801.
 Steadman, Henry R. Recent progress in psychiatry, 574.
 Steinburg, Edgar C. Gastric ulcer produced by intravenous injection of staphylococcus pyogenes, 452.
 Stetson, H. G. The care of the ambulatory accident case, 447.
 Stiles, P. G. Recent progress in physiology, 602.
 Stone, James S. Fractures of the external condyle of the humerus in childhood, with rotation of the condylar fragment, 151.
 Swinerton, Lenna. Treatment of some of the postural defects and habit motions common among the blind, 803.

T

- Thayer, W. S. Scholarship in medicine, 519.
 Thorndike, Paul. Recent progress in genito-urinary surgery, 137.
 Torrance, Gaston. The trained nurse, 573.
 Townsend, William Warren. Pain in the right lower quadrant, 450.

Tracy, Edward A. The correlation between the systolic blood pressure and reflex vasoconstriction of the skin (anemic dermatography), 15; A contribution to vegetative neurology; touching upon heart action, status lymphaticus, and so-called vagotonia and sympathotonia, 538; A note on Barany's sign in epileptics and in school children, 877.

Tuesdale, P. E. The annual discourse—military medicine: a means to perpetuate its teaching in Massachusetts, 825.

Turck, Fenton B. Intestinal venous stasis: diffusion of bacteria and other colloids, 663.

W

Warner, Frank. Traumatic injuries of the kidneys, 740.

White, Franklin W. Some limitations in roentgen-ray evidence of gastro-intestinal lesions, 92; studies of the stomach in syphilis, 11.

White, Leon E. Loss of sight from posterior accessory sinus disease, with report of three cases, 891.

Whitney, James L. Acidosis: a summary of recent knowledge, 225.

Williams, John T. Retroversion of the uterus: its etiology and rational treatment, 558.

Withington, Charles F. William Palmer Bolles—surgeon and man, 360.

Wodehouse, R. P., and Olmsted, J. M. D. Preparation of vegetable proteins for anaphylactic tests, 467.

Wolf, Heinrich Franz, and Neuhof, H. Harold. Concerning the end-results of treatment of fracture of the elbow, 758.

Y

Yerkes, Robert M., and Rossy, Cecilio. A point scale for the measurement of intelligence in adolescence and adult individuals, 564.

Young, Ernest Boyen. Eclampsia at the Boston City Hospital: a review of the cases of twenty-three years, 486; The reasons for the re-entry of hospital patients, 133.

SUBJECTS.

A

Abdominal Pain, Henry Jackson, M.D. 1.

Acidosis: a summary of recent knowledge, James L. Whitney, M.D., 225.

Adenoids in children, some conditions leading to incorrect diagnosis of, Virginus Danbey, M.D., F.A.C.S., 875.

Alcohol Question, the duty of the health departments in, Haven Emerson, M.D., 77.

Allopceia Areata, ringworm of the scalp and, appearing simultaneously in the same location, John E. Lane, M.D., 65.

Allopceia, report of a case of congenital, J. Harper Eustis, M.D., and R. Cunningham, M.D., 210.

Ambulatory Accident Case, the care of the, H. G. Stetson, M.D., 447.

Amebic Abscess, a case of, of the liver in a guardsman recently returned from the Mexican border, Lester Adams, M.D., 808.

Amebic Dermatology, the correlation between the systolic blood pressure and reflex vasoconstriction of the skin, Edward A. Tracy, M.D., 15.

Anaphylactic Preparation of vegetable proteins for tests, R. P. Wodehouse and J. M. D. Olmsted, 467.

Anesthesia, a method of, for soldiers, 778; Obstetric advances, including, the use and abuse of pituitrin, extra-peritoneal Caesarean section, punctionomy and the significance of funnel pelvis, John Osborn Polak, M.D., 88; Paravertebral, Frank C. W. Konrad, M.D., 331; Shockless surgery, paravertebral, with scopalamine and narcophene: a preliminary report, A. R. Kington, M.D., 248.

Annual Discourse, the—military medicine: a means to perpetuate its teaching in Massachusetts, P. E. Tuesdale, M.D., 825.

Appendicitis, Torr Wagner Harmer, M.D., 165.

Army Medical Corps, enlargement of the, 27; examinations, 128.

Arteriosclerosis, with special reference to diet, Louis Faugeres Bishop, A.M., M.D., 721.

Arthromy, the application of the median patella incision for a knee, E. G. Brock, M.D., 63.

Aspermia, a case of, Seelye W. Little, M.D., 355.

B

Barany's Sign, a note on, in epileptics and in school children, Edward A. Tracy, M.D., 877.

Bladder, a method of supporting the, in certain cases of cystocele, Herbert L. Smith, M.D., 591.

Blind, treatment of some of the postural defects and habit motions common among the, Miss Lenna D. Swinerton, 803.

Blodgett, Albert George, M.D., obituary, 330.

Blood, the correlation between the systolic pressure and reflex vasoconstriction of the skin (anemic dermatography), Edward A. Tracy, M.D., 15; An improved transfusion tube, William Reid Morrison, M.D., 468.

Bone Wiring Instruments, demonstration of, John Duff, Jr., M.D., 636.

Book Reviews. Diseases of the digestive tract and their treatment, A. Everett Austin, 643; Encyclopedia Medica, J. W. Ballantyne, 542; Personal health, William Brady, 24; A text-book of human physiology, Albert P. Bruhaker, 8; The manual of therapeutic medicine and massage, C. Hermann Bucholz, 325; A layman's handbook of medicine, Richard C. Cabot, 323; The proceedings of the Charaka Club, 710; The practice of urology, Charles H. Chetwood, 211; Pex's medical handicraft, W. H. Clayton-Greene, 878; The medical clinics of Chicago, 470; Obstetrics, Edward Bradford Cragin, 279; Gynecology for students and

practitioners, Thomas Watts Eden and Cuthbert Lockyer, 743; Diagnosis and treatment of congenital diseases of the spinal cord and its membranes, Charles A. Elsberg, 66; Bone and joint studies, Leonard W. Ely and John Francis Cowan, 279; Blood pressure, Francis Ashley Faught, 325; Constipation, obstipation and intestinal stasis (auto-intoxication), Samuel G. Gant, 324; Public health nursing, Mary Sewall Gardner, 470; Diseases of children, Edwin E. Graham, 102; Handicrafts for the handicapped, Albert P. Mathews, 25; The medical student's visiting list or physicians' diary for 1917, 25; State medicine (health insurance), Charles E. Mongan, Frank E. Bate-man and George A. Miles, 438; Care of patients undergoing gynecologic and abdominal procedures, before, during and after operation, E. E. Montgomery, 507; The clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago, 102; Geriatrics, the diseases of old age, a reference handbook of the medical sciences, Harvard Medical School and its clinical opportunities, Leroy E. Perkins, 211; Military surgery, Dunlap Pearce Penhallow, 643; A manual of otology, Charles Edwin Perkins, 878; Preventive medicine and hygiene, Milton J. Rosenau, 324; Diseases of the eye, George E. de Schweinitz, 102; Vaccine therapy in general practice, G. H. Sherman, 25; The clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago, P. G. Skillern, Jr., 323; Laboratory guide in pharmacology, T. Sollmann, 878; Text-book of fractures and dislocations, with special reference to their pathology, diagnosis and treatment, J. Kellogg Speed, 778; A reference handbook of the medical sciences, Thomas Lathrop Stedman, 507; Stedman's medical dictionary, Thomas Lathrop Stedman, 25; Diseases of the skin, Henry Stetson, 403; Syphilis, Lloyd Thompson, 402; Modern methods of treating fractures, E. W. H. Groves, 902; The breast, John B. Deaver, 903.

Borlan Memorial Hospital, 290.

Brown, Charles Henry, 814.

Buck, Charles Edward, M.D., obituary, 791.

Buckingham, Edward Marshall, M.D., obituary, 177; Memorial resolutions for, 218; by George W. Gay, M.D., 177.

Bubonic Plague in Boston, 177.

C

Cancer occurring in acid parts of the body, A. L. Benedict, A.M., M.D., 172; Renewed activity in the cancer campaign, 509; Personal experience with carcinoma of the cervix, Lincoln Davis, M.D., 660.

Carbon Monoxide, chronic, inhalation and some of its untoward results, William J. McGurn, M.D., 231.

Carpal Bones, results of treatments for fractures of, Bernice B. Marshall, M.D., 323.

Case Report, a, Allen H. Blake, M.D., 356.

Censors' Examination, 646.

Central Nervous System, systemic oldiomycosis: with notes on the life of Frederic J. Farnell, M.D., and Samuel Starr, M.D., 771.

Cesarean Section, vaginal delivery after, Nathaniel R. Mason, M.D., F.A.C.S., 127.

- Charlatans**, shifting and vagabond; who they are and how they arise, J. Victor Haberman, A.B., M.D., D.M.S., 757.
- Colectomy**, right, with special reference to the end results of a series of twelve cases, Peer P. Johnson, M.D., P.A.C.S., 275.
- Communicable Diseases**, resume of: Massachusetts State Department of Health, 218.
- Comparative Statistics** on physical examinations of pupils of Boston Public Schools from December, 1935 to April 1, 1917, William H. Devine, M.D., 775.
- Condyle**, fractures of the external, of the humerus in childhood, with rotation of the condylar fragment, James S. Smith, M.D., F.A.C.S., 274.
- Conservative Surgery**, the advantages of, in operations for diverticulitis of the descending and pelvic colon, John W. Keefe, M.D., LL.D., F.A.C.S., 271.
- Cord**, tumors of the spine and, William Jason Mixer, M.D., 452.
- Correspondence**, Haverhill physicians' War Service Association, Francis W. Anthony, M.D., 824; The Young bill, Frank E. Bateman, M.D., 1446; Medical Officers' Reserve Corps, J. E. Blake, 685; The therapeutic value of radium, J. Harper Blaisdell, M.D., 146; Failure to report ophthalmia neonatorum, Walter F. Bowers, M.D., 109; Registration of physicians, Walter F. Bowers, 659; The unusual case, A. V. Bowler, M.D., 75; The Benedict test, F. Gorham Brigham, 858; Amendment to the Workmen's Compensation Act, Arthur N. Broughman, M.D., 680; Epilepsy and elimination, George Clymer, M.D., 370; Proposed amendments to nurses' registration law, Charles H. Cook, M.D., 331; Sound advice from a former generation, Astley Cooper, 41; The answer to the medical problem in health insurance, Frederick J. Cotton, M.D., 330; An anecdote of Mead and Radcliffe, William Pearce Coues, M.D., 517; Industrial health insurance, an appreciation, F. Croft, 363; Compulsory health insurance, Clarence F. Croft, 411; Industrial health insurance: a protest, W. A. Dolan, M.D., 291; Industrial Accident Board ruling, Frank J. Donahue, 76; Toxic jaundice among munition workers, Francis D. Donoghue, M.D., 684; Letter from chairman of Massachusetts Health Insurance Committee to President of the Massachusetts Medical Society, David L. Edsall, 551; "Sister" meaning "nurse," Alfred Ella, 477; Committee on Accuracy of Certified Causes of Death, H. Emerson, M.D., 516; Is there a hyphen in the name of Dr. Argyll Robertson? John W. Farlow, M.D., 147; Industrial health insurance, Thomas E. Gaudin, M.D., 40; The Flossom Street Health Unit, Ellen Hale, 147; Industrial health insurance, William W. Harvey, M.D., 39; Re-examination of tuberculates, John E. Hawes, 29, 585; The Young bill, John J. Hurley, M.D., 257; Pennsylvania conference of physicians, John Price Jackson, 224; A ruling of the State Board of Registration, Charles Malone, M.D., 75; Thermometer disinfection, Leon S. Medalla, 516; Medical preparedness, Robert E. Noble, 411; A case of cyclocephalus, Gaetano Fraino, M.D., 332; Infantile paralysis in 1917, Richard B. Rand, M.D., 552; Ammonium salicylate in poliomyelitis, Evelyn Robinson, M.D., 75; National Board of Medical Examiners, J. S. Rodman, M.D., 477; Industrial health insurance, I. M. Rubinow, M.D., 267; Industrial health insurance: a rejoinder, I. M. Rubinow, 369; The treatment of stammering, Ernest Tompkins, 651; Industrial health insurance, Charles L. Upton, M.D., 40; London war hospitals, Henry Viets, 222; Industrial health insurance: a rejoinder, George E. Whitehill, M.D., 292; Workmen's insurance in Germany, G. E. Whitehill, M.D., 285; The Young bill: a second rejoinder, George E. Whitehill, M.D., 476; The treatment of impacted hip fractures, Royal Whitman, M.D., 219; A further exposition of the abduction treatment of fracture of the neck of the femur, Royal Whitman, 751; The anti-vaccination campaign, Samuel B. Woodward, M.D., 136.
- Council of National Defense**, 618; Information regarding the correlated activities of the Council of National Defense and the Advisory Commission, the Medical Department of the Government and the Committee of American Physicians for Medical Preparedness, 582.
- Cranial Measurements** of persons dying in insane hospitals, Lawson G. Lowrey, 839.
- Cutaneous Epithelioma** and leprosy scinitis, the use of radium in the treatment of, Frederick S. Burns, M.D., and J. Harper Blaisdell, M.D., 774.
- Cutter, Ephraim**, M.D., obituary, 681.
- Cutter Lectures**, the, 476.
- Cystocele**, a method of supporting the bladder in certain cases of, Herbert L. Smith, M.D., 591.

D

- Death Certificates**, occupations to be entered on, 677.
- Decline of Population** in France, 178.
- Defectives** in our prisons, A. Warren Stearns, M.D., 801.
- Defective Delinquent**, a study of the problem of the so-called, and what has been done in Massachusetts, L. Vernon Briggs, M.D., 371.

- "Deficiency Disease,"** an Eskimo, John W. Little, Jr., M.D., 613.
- Denny, Charles F.**, M.D., obituary, 649.
- Descending Colon**, resection of the, and rectum, Frank H. Lahey, M.D., 275.
- Diabetes Mellitus** and syphilis, Joseph H. Barach, M.D., 53.
- Diet**, rational economy of, 711.
- Dietary Study**, report of a, of St. Paul's School, Concord, New Hampshire, Frank C. Geplart, Ph.D., 17.
- Digestive Disorders**, treatment of pain and distress in, A. Everett Austin, M.D., 357.
- Disease Incidence**, on, in China, Carl A. Hedblom, M.D., 53.
- District Medical Societies**, notes from the, 683, 719, 750.
- Diverticulitis**, the advantages of conservative surgery in operations for of the descending and pelvic colon, John W. Keefe, M.D., LL.D., F.A.C.S., 271.
- Dodd, Walter James**, M.D., obituary, 106; Walter, obituary, 107; Dr. Walter James Dodd, by C. A. Porter, M.D., 763; Walter Dodd in France in 1915, by Rogers, L. M., 84.
- Douglas-Lithgow, Robert Alexander**, M.D., obituary, 412.
- Drugs**, report of Commission on Habit-forming, 140; Drug, in court, V. Anderson, M.D., 755; The drug treatment of morphinism, Frank H. Carlisle, M.D., 209.

E

- Echinococcus Disease**, a study of 29 cases of, at the Massachusetts General Hospital, Lincoln Davis, M.D., and Gerardo M. Balboni, M.D., 726.
- Eclampsia** at the Boston City Hospital: a review of the cases of twenty-three years, Ernest Boyen Young, M.D., 486.
- Editorials**, Massachusetts income tax, 26; Enlargement of the Army Medical Corps, 27; Increase cost of Journal production, 28; Work of the Harvard Infertile Paralysis Commission, 67; Industrial health insurance, 67; A trilogy of health reports, 68; Charles Francis Whittington, 103; The treatment of syphilis, 103; Orthodontia in medicine, 104; Report of Commission on Habit-forming Drugs, 140; Tubing in typhoid fever, 142; New England Surgical Society, 143; Therapeutic value of radium, 143; The medical provisions of the new Federal Food and Drug conference on medical education, 175; The elimination of the rat, 176; Medical exploitation of the immigrant, 212; Sudhoff's Copenhagen codex, 213; Extension courses of the Harvard Medical School, 213; The peril of smallpox, 214; The shadow of war, 251; Industrial health insurance, 251; Thalamic lesions among Civil War veterans, 251; The protest against industrial health insurance, 250; Legislation for control of tuberculosis, 281; The Instructive District Nursing Association, 282; Preparation for War, 283; Proposed amendments to nurses' registration law, 286; Industrial health insurance, 327; Army Medical Corps examinations, 328; A victory in the fight against venereal disease, 366; The Massachusetts Health Insurance Committee, 367; A notice, 367; Industrial health insurance, 404; Workmen's compensation, 406; A public health agent in Massachusetts, 439; An important legal decision, 441; The food value of milk, 471; Medical phases of the new immigration law, 472; Thyroid death, 473; Adequate medical preparedness, 508; Renewed activity in the cancer campaign, 509; Intensive diagnostic methods, 510; The verge of war, 511; Registration of physicians, 511; The act of 1917, 512; Medical preparedness: a fession that is statistically stationary, 543; The modern tendency toward weak-foot, 544; Thermometer disinfection, 544; Registration of physicians, 545; Vaccines in the new Food and Drug Commission, 545; The role of state sanatoria, county tuberculosis hospitals and municipal tuberculosis hospitals in Massachusetts, 578; A desirable surgical research measure, 579; Registration of physicians, 579; The Massachusetts General Hospital, 613; The central control of reflex action, 614; Preparation in military and naval medicine, 615; Card catalog of Massachusetts physicians, 615; War obligations, 644; A new publication, 644; The medical laboratory assistant, 645; Two important letters, 645; Censors' examination, 646; Mobilization of the medical personnel of Massachusetts, 646; Troop diseases, 655; The etiology of gonorrhea conditions, 676; Occupations to be entered on death certificates, 677; Notice to physicians, 677; Massachusetts medical personnel, 677; Rational economy of diet, 711; Physicians and the military age, 712; Harvard Base Hospital Unit, 712; Postponement of industrial health insurance, 713; Stream pollution, 744; Heat and infant mortality, 745; Reconstruction hospitals, 745; The malarial endemic index, 774; A method of anesthesia for soldiers, 778; Pellagra as an economic parameter, 779; Joint Voluntary Committee on Medical Personnel for Massachusetts, 779; Francis Henry Brown, 814; Theerculosis and war, 814; The passing of a famous physician, 816; The Massachusetts Medical Society, 816; Medical notes, 817.

Reconstruction Base Hospital No. 1, 853; The food value of meat preparations and meat extracts, 854; The Massachusetts Medical Society, 855, 879; The role of the internal secretions in the female functions, 880; Medical reminiscences of Waterloo, 881; A French surgeon and poet, 882; Miners' consumption; Tetanus in war and peace.

Elbow, concerning the end-results of treatment of fracture of the, Harold Neuhoof, M.D., and Heinrich Franz Wolf, M.D., 759.

Epilepsies, the incidence of intestinal adhesions as a factor in chronic intestinal stasis in the, H. Caro, M.D., 697.

Essex South District, 493.

Extruterine Pregnancy, Ralph H. Seelye, M.D., 595; Diagnosis of, Garry De N. Hough, M.D., 593.

Eye, a case of the, melanotic sarcoma arising in the, with metastases; autopsy findings, Lester Adams, M.D., 768.

F

Factory Employees, physical examination and medical supervision of, W. Irving Clark, M.D., 249.

Fat Embolism a cause of shock, W. T. Porter, M.D., 248.

Feeble-mindedness as seen in court, V. V. Anderson, M.A., M.D., 429.

Feeding Tube, treatment of perforated ulcer of the stomach with the duodenal, Lester C. Miller, M.D., 97.

Fibroma of mediastinum; report of a case, S. J. Shen, M.D., 53.

First National Medical Congress of the Argentine Republic, 889.

Fisher, Jubee, M.D., obituary, 30.

Food Poisoning, the neurological aspects of, Arthur Willard Fairbanks, M.D., 113.

Foot, nail puncture wounds of the; results in 100 cases, Irving Clark, M.D., F.A.C.S., 541.

Fractures, Results of treatments for, of carpal bones, Herman W. Marshall, M.D., 333; Concerning the end-results of treatment of, of the elbow, Harold Neuhoof, M.D., and Heinrich Franz Wolf, M.D., 559; of the external condyle of the humerus in childhood, with rotation of the condylar fragment, James S. Stone, M.D., F.A.C.S., 151; A study of the x-rays of cases of, of the long bones at the Massachusetts General Hospital, Russell F. Shulman, M.D., 81; Successful use of internal splints in a septic compound, Peirce Henry Leavitt, M.D., 311; Infection of simple closed, John Bansi Blake, M.D., 628.

Furunculoma, the bulb and tuberculosis demonstration, D. E. Armstrong, M.D., 268.

French Surgeon and poet, a, 882.

Frost, Henry Pinckney, M.D., obituary, 821.

Funnel Pelvis, obstetric advances, including anesthesia, the use and abuse of, of puerperal, extra-peritoneal Cesarean section, pudotomy and the significance of, John Osborn Polak, M.D., 87.

Furunculosis, a further word on the sterilization treatment of, John T. Bowen, M.D., 96.

G

Gastric Surgery, some recent experiences in, and duodenal, John T. Bottomley, M.D., 629.

Gastric Ulcers and duodenal ulcers, J. S. Rodman, M.D., F.A.C.S., 83; Remarks on the diagnosis and treatment of, Louis Fischbein, M.D., 465; Produced by intravenous injection of staphylococcus pyogenes, Edgar C. Steinharter, B.S., M.D., 461.

Gastro-Intestinal Lesions, some limitations in roentgen-ray evidence of, Franklin W. White, M.D., 92.

Gastro-Jejunostomy under local anesthesia in the two-stage operation in gastric surgery, David Cheever, M.D., 222.

Guy, Herbert S., M.D., obituary, 751.

Genito-Urinary Surgery, recent progress in, Paul Thorndike, M.D., 137.

Gout, intrathoracic, Frank H. Lahey, M.D., 341; The etiology of gouty conditions, 678.

Gynecology, progress in, Stephen Rushmore, M.D., 700.

H

Habit Motion, treatment of some of the postural defects and, common among the blind, Miss Lenna D. Swinerton, 803.

Harvard Base Hospital Unit, 712.

Harvard Infantile Paralysis Commission, the, and its work in Massachusetts, Robert W. Lovett, M.D., 62; Work of the, 67; A report of the, on the diagnosis and treatment of acute cases of the disease during 1916, Francis W. Peabody, M.D., 637.

Harvard Medical School, Extension courses of the Harvard Medical School, 213; Meeting for the award of academic distinctions, 461; A fund for the study of ptoamine poisoning, 403; Fellowships in preventive

medicine, 476; The Cutter lectures, 476; Report of Dean of Harvard Medical School, 516; Syllabus of lectures on military medicine, 607; Syllabus of lectures on naval medicine and hygiene, 611; Summer instruction to the Third Year class, 649; Department of preventive medicine and hygiene, 921.

Health Departments, the duty of the, in the alcohol question, Haven Emerson, M.D., 77; Massachusetts State; resume of communicable diseases, 218.

Health Insurance, industrial, 67, 108, 251, 327, 404; Abstract of remarks of Dr. C. E. Mongan on, before the council of the Massachusetts Medical Society, December 20, 1916, 55; Young industrial, bill, 146; Committee of 23 on, 368; The fallacious social philosophy of, Frank F. Dresser, 244; The Massachusetts, Committee, 367; Medical services and medical and hospital fees under workmen's compensation, Francis D. Donoghue, M.D., 235; Postponement of industrial, 713; The protest against industrial, 280.

Health Reports, a trilogy of, 68.

Heart Action, a contribution to vegetative neurology; touching upon, status-lymphaticus, and so-called vagotonia and sympathotonia, Edward A. Tracy, M.D., 538.

Heat and infant mortality, 745.

Holton, Henry Dwight, M.D., obituary, 442.

Hospital Patients, the reason for the re-entry of, Ernest Boven Young, M.D., F.A.C.S., 133.

Human Blood, some experience bearing on the medical-legal value of the precipitin test for, Ernest L. Hunt, M.D., and Ora M. Mills, 48.

Humerus, fractures of the external condyle of the, in childhood, with rotation of the condylar fragment, James S. Stone, M.D., F.A.C.S., 151.

I

Ileostomy for ileus and general peritonitis, John W. Lane, M.D., F.A.C.S., 304.

Immigrant, medical exploitation of the, 212.

Immigration Law, medical phases of the new, 472.

Income Tax, Massachusetts, 26.

Inebriety and how to control it, Irwin H. Neff, M.D., 337; From a medical viewpoint, Irwin H. Neff, M.D., 204.

Infant Mortality, heat and, 745.

Injuries, a group of, in modern warfare, John W. Churchman, M.D., 113.

Instructive District Nursing Association, 282.

Intelligence, a point scale for the measurement of, in children and adult individuals, Robert M. Yerkes, Ph.D., and Cecilio S. Rossy, M.D., 564.

Intensive Diagnostic Methods, 510.

Intestinal Adhesions, the incidence of, as a factor in chronic intestinal stasis in the epilepsies, H. Caro, M.D., 697.

Intestinal toxemia and sequelae, William E. Preble, M.D., 296; Venous stasis: diffusion of bacteria and other colloids, Fenton B. Turck, M.D., 663; Intestinal secretions, the role of, in the female functions, 880.

Iritis, a case of, and optic neuritis following tonsillitis, Irving Sobotky, M.D., 806.

J

Jejunal Ulcer, a report of two cases treated by resection and end-to-end anastomosis of the jejunum, Edward P. Richardson, M.D., F.A.C.S., 118.

Journal Production, increased cost of, 28.

K

Kenny, Francis J., M.D., obituary, 74; Memorial resolutions for, 177; Boston City Hospital, memorial resolutions for, 74.

Keratosis Senilis, the use of radium in the treatment of cutaneous epithelioma and, Frederick S. Burns, M.D., and J. Harper Blaisdell, M.D., 774.

Kidneys, traumatic injuries of the, Frank Warner, M.D., F.A.C.S., 740.

L

Labyrinthitis, suppurative: a critical review of its diagnosis and treatment, Arthur B. Duel, M.D., F.A.C.S., 345.

Larynx, report of a case of congenital anomaly of the, George H. Powers, M.D., 843.

Legal Decision, an important, 441.

Leiomyosarcoma, two cases of, C. H. Hare, M.D., 901.

Leprosy, the public health aspects of, George W. McCoy, M.D., 43.

Letters, two important, 645.

Leukemia, a metabolism study of a case of, during

- radium treatment, Arthur Knudson and Theodore Eidos, 563; Remissions in, produced by radium in cases completely resistant to x-ray and benzol treatment, Thomas Ordway, M.D., 430.
- Lipoma** of the intestine, Anthony H. Harrigan, M.D., 353.
- Liver Dulness**, obliteration of, in acute perforation of the stomach and duodenum, with case reports, Martin T. Field, M.D., 60.
- Long Bones**, a study of the x-rays of cases of fracture of the, at the Massachusetts General Hospital, Russell F. Sheldon, M.D., 61.
- Loss of Sight** from posterior accessory sinus disease, Leon E. White, 891.

M

- Malinal Endemic Index**, the, 777.
- Malingering**, mental states responsible for, Ernest B. Emerson, M.D., 736.
- Massachusetts General Hospital**, 613.
- Massachusetts Medical Society**, Special meeting of the Council, December 20, 1916, 32; Abstract of remarks of Dr. C. E. Mongan on health insurance before the Council of the Massachusetts Medical Society, December 29, 1916, 35; Industrial health insurance, 198; Committee on Workmen's Compensation Act, 116; Young industrial health insurance bill, 116; Stated meeting of the Council, 825; Berkshire District: Boylston Memorial Hospital, 290; Committee of 23 on Health Insurance, 268; Essex South District, 109; Notes from the District Medical Societies, 683, 719, 750, 791; The Massachusetts Medical Society, 316, 825; Program of the 136th anniversary, 822; The annual discourse—military medicine: a means to perpetuate its teaching in Massachusetts, P. E. Truesdale, M.D., Fall River, Mass., 825; Annual meeting of the Council, June 12, 1917, 910; Notes from the district societies, Hampshire, 821.
- Massachusetts Physicians**, card catalog of, 615.
- Menses**, observations on, D. M. Lewis, M.D., 742.
- Meat Preparations**, the food value of, and meat extracts, 831.
- Medina Patella Incision**, the application of the, for a knee arthrotomy, E. G. Brackett, M.D., 153.
- Melioidism**, fibroma of: report of a case, S. J. Shen, M.D., 36.
- Medical Corps**, vacancies in the, of the United States army, 578.
- Medical Education**, Chicago conference on, 175.
- Medical Personnel**, Massachusetts, 677; Joint voluntary Committee on, for Massachusetts, 779; Mobilization of the, of Massachusetts, 616.
- Medical Preparedness**, 498.
- Medical Profession**, a, that is statistically stationary, 543.
- Medical Reminiscences** of Waterloo, 881.
- Medical Secretary**, the, and laboratory assistant, 645.
- Medicine**, scholarship in, W. S. Thayer, M.D., 519.
- Medico-Legal Value**, some experience bearing on the, of the precipitin test for human blood, Ernest L. Hunt, M.D., and Ora M. Mills, 48.
- Meigs, Joe Vincent**, M.D., obituary, 442.
- Melanotic Sarcoma**, a case of, arising in the eye, with metastases; autopsy findings, Lester Adams, M.D., 768.
- Memorial Addresses**, Edward Marshall Buckingham, M.D., by George W. Gay, M.D., 61; Dr. Walter James Dodd, by C. A. Porter, M.D., 763; Walter Dodd in France in 1915, by Roger L. Lee, M.D., 761.
- Memorial Resolutions**, Memorial resolutions for Edward M. Buckingham, M.D., 218; Memorial resolutions for Dr. Keany, 177; Memorial resolutions for Charles F. Withington, M.D., 218.
- Military Age**, 1917, and the, 312.
- Military Medicine**—the annual discourse: a means to perpetuate its teaching in Massachusetts, P. E. Truesdale, M.D., 825; History of the, and its contributions to science, Major Chamberlain, U.S.A., 479; Scyllabus of lectures on, 607.
- Milk**, the food value of, 471.
- Miners' Consumption**, 904.
- Miscellany**, Boston City Hospital, memorial resolutions for Dr. Keany, 74; Changes in the Medical Corps, U. S. Navy, 109; Bubonic plague in Boston, 177; Decline of population in the Condition of the Poor, industrial health insurance bill, 173; Massachusetts State Department of Health: resume of communicable diseases, 218; Washington conference on social insurance, 253; Workmen's compensation in the United States, 255; Resume of communicable diseases in Massachusetts for January, 1917, 109; Workmen's compensation Act, 111; New York Association for Improving the Condition of the Poor, 550; Information regarding the correlated activities of the Council of National Defense and the Advisory Commission, the Medical Departments of Government and the Committee of American Physicians for Medical Preparedness, 582; Council of National Defense, 618; The medical service of the German Army, 791; University of Chicago Medical School, 889; Sanitation and medicine in South America, 887; First National Medical Congress of the Argentine Republic, 889; Resolution, Lynn Medical Fraternity, 922.

- Modern Warfare**, a group of injuries in, John W. Churchill, M.D., 113.
- Morphine-Atropine**, pituitrin and ether in obstetrics, John F. Martin, M.D., 310.
- Morphinism**, the drug treatment of, Frank H. Carhale, M.D., 509.
- Mouth Infections** in their relation to systemic disease, Paul A. Hucut, M.D., 695.
- McIntosh, Herbert B.**, M.D., obituary, 684.

N

- Nail Puncture Wounds of the Foot**: results in 100 cases, Irving Clark, M.D., F.A.C.S., 541.
- Naval Medicine**, preparation in military and, 615; Syllabus of lectures on, and hygiene, 611.
- Needle**, an improved venipuncture, Guy G. Fernald, M.D., 173.
- Nephrothlipsis**, clinical observations on 331 cases presenting symptoms of, R. F. O'Neill, M.D., 623.
- Nerve Regeneration**, the sensory evidence of, Isador H. Coriat, M.D., 192.
- New England Surgical Society**, inaugural meeting, Boston, October 5-7, 1916; presidential address, Samuel J. Mixer, M.D., 111, 143.
- New Instrument**—an improved venipuncture needle, Guy G. Fernald, M.D., 173.
- New Publication**, a, 644.
- Notice**, a, 367; To physicians, 677.
- Nurses**, the trained, Gaston Torrance, M.D., 573.
- Nurses' Registration Law**, proposed amendments to, 326.

O

- Obituaries**, Albert George Blodgett, M.D., 330; Charles Edward Buok, M.D., 791; Edward Marshall Buckingham, M.D., 177; Ephraim Cutter, M.D., 684; Charles F. Denny, M.D., 649; Walter James Dodd, M.D., 106; Walter J. Dodd, M.D., 767; Robert Alexander Douglas-Littigow, M.D., 142; Jabez Fisher, M.D., 39; Henry Pinckney Frost, M.D., 821; Herbert S. Gay, M.D., 751; Henry Dwight Holton, M.D., 44; Francis J. Keany, M.D., 74; Joe Vincent Meigs, M.D., 443; Herbert B. McIntosh, M.D., 584; Joseph F. O'Shea, M.D., 549; Warren Wilbur Pillsbury, M.D., 550; Charles Henry Rice, M.D., 108; Christopher Seymour, M.D., 821; Thomas Bernard Sharp, M.D., 548; Evolution of an adventitious use and abuse of pituitrin, extra-peritoneal Caesarean section: pubiotomy and the significance of funnel pelvis, J. Osborn P. O'Shea, M.D., 793.
- Obstetric Advances**, including anesthesia, the use and abuse of pituitrin, extra-peritoneal Caesarean section: pubiotomy and the significance of funnel pelvis, J. Osborn P. O'Shea, M.D., 793.
- Obstetrics**, morphine-atropine, pituitrin and ether in, John F. Martin, M.D., 310.
- Orthodontia** in medicine, 104.
- Osteomyelitis**, the treatment of, Channing C. Simmons, M.D., 653.
- O'Shea, Joseph F.**, M.D., obituary, 549.

P

- Pain** in the right lower quadrant, William Warren Townsend, M.D., 450.
- Pancreas**, the principles underlying the surgery of the, John B. Deaver, M.D., 187.
- Pancreatic Insufficiency**, the recognition of, with special reference to the Loewi test, H. Ryerson Decker, M.D., 867.
- Pellagra** as an economic barometer, 779.
- Pelvic Abscess**, a wonderful provision of nature for drainage of the, evolution of an adventitious drainage tube, Horace Packard, M.D., 807.
- Pelvic Operations**, division of the ureter in, William F. Graves, M.D., 148.
- Perforations of the Stomach and Duodenum**, obliteration of liver dulness in acute, with case reports, Martin T. Field, M.D., 60; Acute and sub-acute, at the Massachusetts General Hospital, Edward P. Richardson, M.D., 158.
- Perineal Prostectomies**, comparative results in suprapubic and, John Martin Gile, M.D., 589.
- Peritonitis**, ileostomy for ileus and general, John W. Lane, M.D., F.A.C.S., 304.
- Pernicious Anemia**, the treatment of, Ralph C. Larabee, M.D., 553.
- Physical Examinations** and medical supervision of factory employees, Irving Clark, M.D., 541.
- Physiologic Statistics**, on, of pupils of Boston public schools from December 1, 1915, to April 1, 1917, William H. Devine, M.D., 773.
- Physician**, the passing of, famous, 816.
- Physiological Factors**, concerned in surgical shock, Walter B. Cannon, M.D., 859.
- Physique** and the military age, 712.
- Pillsbury, Warren Wilbur**, M.D., obituary, 550.
- Pituitrin**, morphine-atropine, and ether in obstetrics, John F. Martin, M.D., 310.
- Pneumonia**, thoughts on the treatment of, Everett A. Bates, M.D., 293.

- Poliomyelitis**, the epidemiology of anterior, epidemics, 1916, D. M. Lewis, M.D., 234; The cause of, Horace Greeley, M.D., 540; Recent investigations on the bacteriology of acute, Ludvig Hektoen, 687.
- Poor**, New York Association for Improving the Condition of the, 550.
- Post-mortem Examinations**, some unusual conditions observed at Danvers State Hospital, Lawson G. Loring, A.M., M.D., 872.
- Postural Defects**, treatment of some of the, and habit motions common among the blind, Miss Lenna D. Swinerton, 503.
- Preventive Medicine**, the, and the public health, Merrill E. Champion, M.D., C.P.H., 840.
- Pregnancy**, diagnosis of extrauterine, Garry DeN. Hough, M.D., 593; Extrauterine, Ralph H. Seelye, M.D., 595; A case of tubal, Edward H. Mackay, M.D., 808.
- Prenatal Work**, the beneficial results of, Michael M. Davis, Jr., Ph.D., 5.
- Preventive Medicine**, fellowships in, 476.
- Progress in Gynecology**, Stephen Rushmore, M.D., 700; Of surgery, 1916, J. B. Blake, M.D., and F. H. Lahey, M.D., 313; Recent, in physiology, P. G. Stiles, Ph.D., 602; Recent, in psychiatry, Henry R. Stedman, M.D., 574.
- Prostatitis**, seminal vesiculitis and, treated by vesicotomy and prostatic drainage, John H. Cunningham, Jr., M.D., 422.
- Psychoses**, fundamental considerations in the treatment of the, Donald Gregg, M.D., 57.
- Psychopathic Patients**, possibilities in social service for, Mary C. Jarrett, 201.
- Public Health**, the practising physician and the, Merrill E. Champion, M.D., C.P.H., 840; A, agent in Massachusetts, 439.
- Pulmonary Resonance**, variations in, George C. Shattuck, M.D., 593.
- Pulmonary Voice Sounds**, variations in, William Duncan Reid, M.D., 601.
- Pyræria**, an anatomical factor as a cause of, Carolus M. Cobb, M.D., 95.

R

- Radium**, therapeutic value of, 143; Remissions in leukemia produced by, in cases completely resistant to x-ray and benzol treatment, Thomas Orway, M.D., 490; The use of, in the treatment of cutaneous epithelioma and keratosis senilis, Frederick S. Burns, M.D., and J. Harper Blaisdell, M.D., 774.
- Rat**, the elimination of the, 176.
- Reconstruction Base Hospital No. 1**, 853.
- Reconstruction Hospitals**, 745.
- Recto-Vaginal Septum**, adenomyoma of the, Foster S. Kellogg, M.D., 22.
- Rectum**, the mucosa of the, and sigmoid colon as a focus of infection, Horace W. Soper, M.D., 766.
- Reflex Action**, the central control of, 614.
- Registration of Physicians**, 511, 545, 579.
- Renal Stone**, George Gilbert Smith, M.D., 524.
- Report of Dean of Harvard Medical School**, 516.
- Respiratory Section**, an aid in surgical shock, W. T. Porter, M.D., 699.
- Rice, Charles Henry, M.D.**, obituary, 108.
- Ringworm** of the scalp and alopecia areata appearing simultaneously in the same location, John E. Lane, M.D., 65.
- Röntgen-Ray Evidence**, some limitations in, of gastro-intestinal lesions, Franklin W. White, M.D., 92.

S

- Scalp**, ringworm of the, and alopecia areata, appearing simultaneously in the same location, John E. Lane, M.D., 65.
- Scarlet Fever**, a laboratory aid in the diagnosis of, D. M. Lewis, M.D., 170.
- Scholarship in Medicine**, W. S. Thayer, M.D., 519.
- Seminal Vesiculitis** and prostatitis treated by vesicotomy and prostatic drainage, John H. Cunningham, Jr., M.D., 422.
- Senate Bill No. 135**, argument in favor of, before the Joint Committee on the Judiciary, by the Committee on Workmen's Compensation of the Massachusetts Medical Society, 297.
- Sequelæ**, intestinal toxemia and, William E. Preble, M.D., 296.
- Scymour, Christopher, M.D.**, obituary, 821.
- Shattuck Lecture**—the physiological factors concerned in surgical shock, Walter B. Cannon, M.D., 859.
- Sherris, Thomas Bernard, M.D.**, obituary, 549.
- Shifting**, charlatan and vagabond: who they are and how they arise, J. Victor Haberman, A.B., M.D., D.M.S., 757.
- Shock**, fat embolism a cause of, W. T. Porter, M.D., 248.

- Shockless Surgery**, paravertebral anesthesia with scopalamine and narcophine: a preliminary report, A. R. Kimpton, M.D., 218.
- Shoulder Joint**, a case of congenital dislocation of the, Frank E. Peckham, M.D., 355.
- Sigmoid Colon**, the mucosa of the rectum and, as a focus of infection, Horace W. Soper, M.D., 766.
- Smallpox**, the peril of, 214.
- Social Insurance**, Washington Conference on, 253.
- Social Service**, possibilities in, for psychopathic patients, Mary C. Jarrett, 201.
- Society Reports**, Boston Association for Relief and Cure of Tuberculosis, 318; Boston Surgical Society, 322; Regular meeting held March 5, 1917, 621; College of Physicians of Philadelphia, section on medical history, meeting November 21, 1916, 364; The New England Society of Dermatology and Syphilis, fourth meeting, April 25, 1916, 392; Fifth meeting, October 18, 1916, 394; meeting December 13, 1916, 810; New England Pediatric Society, 670; Meeting December 29, 1916, 707; The Philadelphia County Medical Society, department of public health and charities; Clinical Congress of Surgeons of North America, October 27, 1916, 317.
- Spine**, tumors of the, and cord, William Jason Mixer, M.D., 552.
- Splints**, successful use of internal, in a septic compound fracture, Peirce Henry Leavitt, M.D., 311.
- Special Meeting of the Council**, 285.
- Status Lymphaticus**, a contribution to vegetative neurology; touching upon heart action, and so-called vagotonia and sympathicotonia, Edward A. Tracy, M.D., 538.
- Stomach**, studies of the, in syphilis, Franklin W. White, M.D., 11.
- Stream Pollution**, 744.
- Stuhlhof's Copenhagen Codex**, 213.
- Supportive Lymphaticitis**, a critical review of its diagnosis and treatment, Arthur B. Duell, M.D., F.A.C.S., 345.
- Surgery**, the principles underlying the, of the pancreas, John B. Deaver, M.D., 187; Progress of, 1916, J. B. Blake, M.D., and F. H. Lahey, M.D., 313.
- Surgical Operations**, the coefficient of safety in, Herbert L. Smith, M.D., 88.
- Surgical Research Measure**, a desirable, 579.
- Surgical Shock**, respiratory suction an aid in, W. T. Porter, M.D., 699.
- Symphaticotonia**, a contribution to vegetative neurology; touching upon heart action, status-lymphaticus, and so-called vagotonia and, Edward A. Tracy, M.D., 538.
- Syphilis**, studies of the stomach in, Franklin W. White, M.D., 11; Diabetes mellitus, and, Joseph H. Barach, M.D., 58; The treatment of, 108; What the State is doing for the syphilitic at the Infirmary at Tewksbury, Mass., based on a survey on syphilis conducted at the State General Infirmary, Ora Mabelle Lewis, 380; Pulmonary with the report of a probable case, Cadis Phipps, M.D., 390.
- Systolic Blood**, the correlation between the, pressure and reflex vasoconstriction of the skin (anemic dermatography), Edward A. Tracy, M.D., 15.
- Systemic Disease**, mouth infections in their relation to, Paul A. Hudnut, M.D., 695.
- Systemic Oidionocytosis**, with manifestations in central nervous system, Frederic J. Farnell, M.D., and Samuel Starr, M.D., 771.

T

- Tetanus** in war and peace, 904.
- Thalamic Lesions** among Civil War veterans, 251.
- Therapeutic and Preventive Medicine**, The drug treatment of morphinism, Frank H. Arliss, M.D., 209; Thoughts on the treatment of pneumonia, Everett A. Bates, M.D., 293; Treatment of pain and distress in digestive disorders, A. Everett Austin, M.D., 357; The treatment of pernicious anemia, Ralph C. Larabee, M.D., 553; Arteriosclerosis, with special reference to diet, Louis Faugeres Bishop, A.M., M.D., 721.
- Thermometer Disinfection**, 544.
- Thymus Death**, 473.
- Thyroid Abscesses** (with mention of two new signs of this condition), Frank H. Lahey, M.D., 94.
- Tonsil**, an interesting Joseph Frenn, M.D., 249.
- Tonsillitis**, a case of iritis and optic neuritis following, Irving Sobotky, M.D., 806.
- Trained Nurse**, the, Gaston Torrance, M.D., 573.
- Trench-Foot**, H. M. Frost, M.D., 501.
- Troop Diseases**, 675.
- Tubal Pregnancy**, a case of, Edward H. Mackay, M.D., 808.
- Tuberculosis**, results obtained by the class method of home treatment in pulmonary, during a period of ten years, Joseph H. Pratt, M.D., 13; Legislation for control of, 281; The Framingham health and demonstration, D. B. Armstrong, M.D., 294; Hypertrophic ileo-caecal, Homer Gage, M.D., and Ernest L. Hunt, M.D., 259; "Constitutional" versus "local" signs and symptoms in the diagnosis of early pulmonary, John B. Hawes, 2d, M.D., 307; The role of state

- sanatoria, county hospitals and municipal tuberculosis hospitals in Massachusetts, 578; three types of, Mary E. Lapham, M.D., 795; Tuberculosis and the war, 815.
- Tumors** of the spine and cord, William Jason Mixer, M.D., 452; A large ovarian, Frank A. Pemberton, M.D., 534.
- Typhoid Fever**, tubbing in, 142.

U

- Ulcer**, treatment of perforated, of the stomach with the duodenal feeding tube, Lester C. Miller, M.D., 37; X-ray follow-up report of seventeen cases of pylorotomy for, John H. Lindsey, M.D., 80; Gastric, produced by intravenous injection of staphylococcus pyogenes, Edgar C. Steinharter, B.S., M.D., 461; remarks on the diagnosis and treatment of gastric, Louis Fischbein, M.D., 465; Gastric and duodenal, J. S. Rodman, M.D., F.A.C.S., 531.
- Umbilical Hernia**, a report of an unusual case of, John W. Lane, M.D., 61.
- University of Chicago Medical School**, \$86.
- Urinary Back Pressure**, the management of operative cases presenting, Arthur L. Chute, M.D., 155.
- Uterus**, retroversion of the: its etiology and rational treatment, John T. Williams, M.D., F.A.C.S., 558.

V

- Vaginal Delivery** after Caesarean section, Nathaniel R. Mason, M.D., F.A.C.S., 127.
- Vasoconstriction**, the correlation between the systolic blood pressure and reflex, of the skin (anemic dermatography), Edward A. Tracy, M.D., 15.
- Vasomotor Arrest**, on, in the insane: studies based on 20,000 measurements of the tension of the radial pulse in 250 cases of various forms of insanity, Claes J. Enebuske, Ph.D., M.D., 355.
- Vegetable Proteins**, preparation of, for anaphylactic tests, R. P. Wodehouse and J. M. D. Olmsted, 467.
- Vegetative Neurology**, a contribution to: touching up-

on heart action, status-lymphaticus, and so-called vagatonia and sympathicatonia, Edward A. Tracy, M.D., 538.

- Veneral Disease**, a victory in the fight against, 366.
- Venipuncture Needle**, an improved, Guy G. Fernald, M.D., 173.

Vesiculitis, seminal, and prostatitis treated by vesicu-
lotomy and prostatic drainage, John H. Cunnings-
ham, Jr., M.D., 422.

W

- War**, the shadow of, 251; Preparation for, 283; The verge of, 511; the actuality of, 543; Obligations, 644.
- War Veterans**, thalamic lesions among Civil, 251.
- Weak-Foot**, the modern tendency toward, 544.
- Withington, Charles Francis**, obituary, 103; Memorial resolutions for, 218.
- Workmen's Compensation**, Argument in favor of Senate Bill No. 135, before the Joint Committee on the Judiciary, 397; Workmen's compensation in the United States, 255; Specific payments under the Workmen's Compensation Act, Francis D. Donoghue, M.D., 671.

X

- X-Ray** follow-up report of seventeen cases of pylor-
ectomy for ulcer, John H. Lindsey, M.D., 80; A study
of the, of cases of fracture of the long bones at the
Massachusetts General Hospital, Russell F. Shel-
don, M.D., 61; Remissions in leukemia produced by
radium in cases completely resistant to x-ray and
benzol treatment, Thomas Ordway, M.D., 490.

Y

- Young Bill**, the medical provisions of the, 174; The
Young industrial health insurance bill, 179.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

January 4, 1917

ADDRESS

ABDOMINAL PAIN. By Henry Jackson, M.D., Boston..... 1

ORIGINAL ARTICLES

THE BENEFICIAL RESULTS OF PRENATAL WORK. By Michael M. Davis, Jr., Ph.D., Boston..... 11

STUDIES OF THE STOMACH IN SYMPHYSIS. By Franklin W. White, M.D., Boston..... 13

RESULTS OBTAINED BY THE CASS METHOD OF TONIC TREATMENT IN PLEURISY AND TUBERCULOSIS DURING A PERIOD OF TEN YEARS. By Joseph H. Pratt, M.D., Boston..... 15

THE CORRELATION BETWEEN THE SYSTOLIC BLOOD PRESSURE AND REFLEX VASOCONSTRICTION OF THE SKIN (ANEMIC DERMOGRAPHY). By Edward J. Tracy, M.D., Boston..... 17

REPORT OF A DIETARY STUDY OF ST. PAUL'S SCHOOL, CONCORD, NEW HAMPSHIRE. By Frank C. Gephart, Ph.D., New York..... 22

CLINICAL DEPARTMENT

ADENOMYOMA OF THE RECTO-VAGINAL SEPTUM. By Foster S. Kellogg, M.D., Boston..... 23

BOOK REVIEWS

Personal Health. By William Brady, M.D..... 24

Latin for Pharmacists. By George Howe, Ph.D., and John G. Beard, Ph.D..... 25

Vaccine Therapy in General Practice. By G. H. Sherman, M.D. The Medical Record Visiting List of Physicians' Diets for 1917. 25

Physiological Chemistry. By Albert P. Matthews, Ph.D., 25

Stedman's Medical Dictionary. By Thomas Lathrop Stedman, A.M., M.D., 25

MASSACHUSETTS INCOME TAX..... 26
ENLARGEMENT OF THE ARMY MEDICAL CORPS..... 27
INCREASED COST OF JOURNAL PRODUCTION..... 28
MEDICAL NOTES..... 28

MASSACHUSETTS MEDICAL SOCIETY

SPECIAL MEETING OF THE COUNCIL, DECEMBER 20, 1916..... 32
ABSTRACT OF REMARKS OF DR. C. E. MORGAN ON HEALTH INSURANCE BEFORE THE COUNCIL OF THE MASSACHUSETTS MEDICAL SOCIETY, DECEMBER 20, 1916..... 35

OBITUARY

JABEZ FISHER, M.D., 39

CORRESPONDENCE

INDUSTRIAL HEALTH INSURANCE. William W. Harvey, M.D., 39
INDUSTRIAL HEALTH INSURANCE. Thomas F. Gunning, M.D., 40
INDUSTRIAL HEALTH INSURANCE. Charles L. Upton, M.D., 41
SOUND ADVICE FROM A FORMER GENERATION, Ashdon Compter..... 41

MISCELLANY

NOTICES, APPOINTMENTS, RECENT DEATHS, ETC., 42

Address.

ABDOMINAL PAIN.*

By HENRY JACKSON, M.D., BOSTON.

I was pleased when your president asked me last June to read a paper before your society, though I had no new and startling medical data to bring before you. I considered carefully what subject to choose, and decided to try to reduce to some definite form the experience of a large general medical hospital service in the diagnosis, treatment and prognosis of the broad subject of abdominal pain.

I know that I must leave out some important factor which may be brought out in discussion; please consider that the personal pronoun does not by any means always mean simply my own views on doubtful points, but the opinion obtained by consultation with my colleagues.

Though most of my experience comes, of course, from hospital cases, I shall introduce a good many private cases, personal, or seen in consultation; I feel that the private case is often much more difficult to diagnose, a case in which often an immediate diagnosis must be made, yet we are deprived of some of the more intricate methods of diagnosis obtainable only in a well equipped laboratory.

In order to give some of my personal experiences, I shall speak of a few rare causes of abdominal pain, which may practically be of little value because they occur but seldom, yet when

they do occur, they may be of much value as suggestions for the appropriate treatment.

As most of you probably know, I speak only as a physician who may sometimes be right in diagnosis, yet must depend upon his surgical colleague for the proper treatment and subsequent care of the patient. In a large city, the physician is necessarily separated from the surgeon, perhaps not always an advantage to the patient. A friend of mine in a small town near Boston, said to me that he thought many lives were jeopardized when medical care was divided from surgical interference, adding that when he made a diagnosis of appendicitis, he went to his buggy for his instruments and operated then and there. But, taking it all in all, I feel a patient is safer in the hands of a man who devotes at least a large part of his time to surgery.

The causes of abdominal pain may be broadly divided into several different classes, which we will try to differentiate the one from the other:

1. Spasm of internal organs, of which gall-stone colic may be spoken of as the type.

2. Pain of "nervous origin," the type of which is to be found in the crises gastriques of tabes; this is perhaps the most dangerous classification, as usually the diagnosis is wrong, and on the other hand, a good many diagnoses of ulcer of the stomach have been made when the pain and vomiting were only localized manifestations of spinal cord diseases.

3. Pathologic lesions of various internal organs: for instance, ulcers of various internal organs, as stomach, duodenum, etc. Under this head may be classified the pain due to volvulus

* Read at a meeting of the Essex North District Medical Society on October 11, 1916.

twist of the intestines and torsion of other organs.

4. "Referred pain." To my mind this represents the most dangerous type of abdominal pain. Such a diagnosis is permissible, justified, yet in each individual case the burden of proof lies upon the physician, and often requires the skill of a good surgeon to confirm the diagnosis of the physician. The most common cause, in my experience, is the very acute abdominal pain which may be associated with the onset of pneumonia; other practical points I can bring forward in the discussion of the various types.

5. The last, but, of course, the most common, and certainly the most important type, because amenable to immediate and successful treatment,—inflammation of the various internal organs, which eventually leads to peritonitis, local or general, with prompt recovery or tragic death, according to the knowledge and skill of the attending physician.

Into one of these five types I feel most and perhaps all cases of abdominal pain may be divided.

Before entering upon the discussion of the various types and causes of abdominal pain, certain broad principles may be enunciated which apply to all forms of pain, are of utmost importance, and must be held always before the mind when approaching the diagnosis of the individual case. The symptoms and signs of most importance are: Pain, tenderness, spasm, fever, vomiting, rapid pulse, all clinical phenomena which may be determined at the bedside, and represent the data on which in most cases we may make our diagnosis. We are often assisted, and our diagnosis confirmed, though not made, by the laboratory examination of the blood showing a leucocytosis which confirms our diagnosis of some acute septic process, or the urine demonstrating some acute genito-urinary condition which has caused the pain.

For the patient, pain is the main issue, but as pain is the chief question for the patient, so spasm and tenderness should be the paramount questions for the doctor. Fortunately, the question of pain is a doubtful factor dependent often upon the susceptibility of the individual, is a symptom in the specific sense, whereas, tenderness, with associated spasm, is a sign demonstrable to the physician, independent of the will of the patient, often most marked in narcosis, and the one most important sign on the presence or absence of which our diagnosis is made, and appropriate treatment instituted.

Pain may be really terrific, yet the patient is in no danger; spasm may be slight, yet show the surgeon that only an immediate laparotomy can save the patient's life.

I once received an urgent telegram to meet a patient at a certain hour on his arrival in Boston,—a most intelligent man who was far from neurotic. When I saw him he apologized for asking me to hurry, and said his pain had gone,

though during the day it had been very severe. I saw a man sitting at comfort in his library; he had a little fever. Examination showed sharply localized tenderness at McBurney's point, with definite spasm. Diagnosis, appendicitis, and operation three hours later showed a ruptured appendix, with an early localized peritonitis. He gave a history of having eaten some indigestible food, the diagnosis had been acute indigestion, and the treatment castor oil, followed by salts.

In this case, the absence of pain was really the most serious symptom, when associated with the definite tenderness and spasm, as it led us to consider that rupture was the probable cause of the relief of the pain.

Fortunately, spasm is not dependent upon the patient, or modified at his desire. Pain and vomiting are very common symptoms, which may be of much value to assist us in a diagnosis, but for the sake of safety, we should never make a diagnosis of acute indigestion, or green apple colic, when to pain and vomiting are added tenderness and spasm, whether fever be present or not; fever confirms the diagnosis, and often differentiates the type, but is not a necessary accompaniment of serious inflammation of the abdominal cavity in its early stages.

I regret to say that I have made the mistake of not attributing sufficient importance to a slight spasm; only last winter, in the City Hospital, we overlooked a case of acute appendix, though we considered the case carefully. Just as I left the bed, I noticed a rapid pulse on the chart, and regretted too late that I did not go back to review again more carefully all other signs. Of course I do not mean to suggest that I have always been able to make a correct diagnosis, but I have never regretted advising an operation, and, on the other hand, have bitterly regretted that an operation was done too late to save life, or when a generalized peritonitis made convalescence prolonged and hazardous.

Exceptions prove the rule, and in one case I, with several others, advised laparotomy in a case that turned out to be acute nephritis, yet as we reviewed the case at the time, we felt no other course was justifiable. Fortunately that case recovered.

In view of the recent widespread theory that operations for acute abdominal conditions are too frequent, it seems to me comforting that statisticians can show that operations are rarely performed without adequate cause, and I am certain that most of us have cause to regret that we overlooked the importance of spasm, making a diagnosis of colic or nervous pain in a patient, who really had appendicitis or pus tubes. I know this has been my experience in a large general hospital, where the surgeons and physicians are in constant consultation and, what is perhaps more important, are always under the criticism of bright young house officers.

To reiterate: pain, tenderness, spasm and fever never mean indigestion.

I wish now to take up the various classes of abdominal pain, of which I have made five divisions.

1. Spasm of internal organs.

(a) Intestinal colic. The usual cause is the ingestion of some indigestible food, or an excess of proper food. As improper food is the usual cause of such a disturbance, vomiting may be added to the pain, irrespective of the severity of the pain, and this is a complicating factor which may cause much doubt in the diagnosis. In the elimination of more serious trouble, we may depend on the absence of tenderness, the pain being often relieved by pressure, the absence of spasm and no fever, with a relatively slow pulse. The appropriate treatment is starvation and cartharsis. In constipation of long standing, masses of faeces may well cause doubt: I have made more than once a definite diagnosis of some abdominal tumor, and been proven wrong by the passage of enormous masses of faeces. I saw in consultation years ago an old lady, merely to give an opinion as to the safety of ether for a laparotomy. I suggested faecal masses, and was pretty sure I was right, when her doctor said she had constant watery movements. She was cured, and is today well, after the rectum was mechanically emptied, and she had large doses of castor oil.

In a doubtful case, give no food, avoid opium, and try enemata, aided sometimes by small doses of belladonna.

(b) Gallstone colic: sudden in onset, often with a history of antecedent "indigestion," and perhaps as a sign, other attacks of abdominal pain. No fever, and for some reason that is not plain, even in the absence of jaundice, a pulse normal in rate and often slow. The pain may be intense, situated in the upper abdomen, and often radiating into the back; the pain may stop as suddenly as it began, so care must be used in giving morphine. The proof of the cause of the pain is furnished by the appearance after two or three days of slight jaundice. The immediate treatment is morphine. If fever and tenderness high up in the abdomen appear in a day or so, we must be on our guard for cholecystitis, a condition that has occurred in patients of mine, who had previously weathered more than one attack of apparently simple gallstone colic.

My own feeling is that delay in operating for gallstone colic after more than one attack is unwise. Many Boston surgeons favor operation after one definite attack, unless some circumstances especially contraindicate an abdominal operation.

(c) Renal colic. As in gallstone colic, the onset is sudden; the pain radiates towards the groin, and is often felt as a sharp pain in the penis. As I have seen it, it is a most agonizing pain, often accompanied by a pulse much more

rapid than in gallstone colic; a complicating factor in diagnosis is found in tenderness which may be felt along the course of the ureter, and I have known of a case in which a stone caught in the ureter required laparotomy, and led to a possible diagnosis of appendicitis. The pain is much more apt to be intermittent than in gallstone colic. Within a few hours, or at most a day, we almost invariably find in the urine a few fresh red blood globules, not a haemorrhage, but a few cells which must be sought for by the microscope. We must watch carefully for several days for the stone. Treatment: morphine, and large amounts of an alkaline water.

(d) Ptomain poisoning. Intense abdominal pain, vomiting, collapse, with cold sweat, and a rapid pulse. This is so rare that I always take it for granted that such a diagnosis is not permitted. I never saw a case, though last winter two very alarming cases followed eating partridge recently shot by a prominent surgeon, who was one of the victims. I have several times been called in consultation to cases of ptomain poisoning, but always found some other condition, one the rupture of an extra-uterine pregnancy, one abortion due to passage of a sound, and others, some acute septic condition of the abdomen.

I, of course, refer to a serious, acute condition, and have no quarrel with a man who cares to designate as ptomain poisoning any acute form of indigestion caused by decayed food, and in certain individuals, by various articles of diet harmless to most people.

2. Pain of nervous origin. Tabes may lead to many errors. The sudden onset of the crisis gastriques, with vomiting, and sharp abdominal pain, may well suggest the diagnosis of some acute essential abdominal lesion. I have seen several cases in consultation in the hospital, and once in private practice in which this mistake was made. There, of course, the absence of fever is the first point, and the subsequent diagnosis of a probable locomotor ataxia from the classical signs of this disease confirm the opinion. The main symptoms of acute abdominal disease—spasm and tenderness—are lacking. Aside from tabes, acute inflammation of the lumbar nerves, or even sciatica, may give rise to some doubt.

3. Pathologic lesions of various internal organs.

In this class of diseases the most mistakes are made, and we meet the most dangerous class of cases. Here spasm and tenderness take front rank to show the surgeon that he is not dealing with a case of colic, or other type of acute indigestion. I have seen many mistakes made, and many lives saved by the definite diagnosis of some organic lesion, curable by a prompt laparotomy. The onset is sudden, the pain intense, usually the pulse rapid and out of all proportion to the general condition of the patient; the pain is due to a mechanical condition, not to inflammation, so at the onset of such cases, an im-

portant sign is the absence of fever, and the leucocytosis which accompanies any and all inflammatory processes.

A lady of 60 years of age had had for several years much pain, considered as probably due to a condition of the heart known to exist; she had also what she called "neuralgia" of the abdominal wall. There had been no symptoms to suggest any acute stomach disease.

I was called to her on account of acute colicky pain which followed immediately after a very rich and very indigestible luncheon. From the first I was anxious, as her symptoms were different from what I had seen before. Pulse rapid, and general appearance indicated the grave condition called by the surgeon "anxiety," so hard to describe, and so important in prognosis.

In a few hours spasm and definite tenderness made me call a surgeon. He was sure it was colic.

A laparotomy nearly 48 hours later showed a perforated gastric ulcer. This case was most carefully watched, and all possible causes of the abdominal pain were considered, yet a fatal mistake was made, due, I felt at the time, to the fact that spasm and tenderness were not given their proper due, in a person of a very nervous temperament, who had weathered many an attack of abdominal pain. A careful review of her previous history did not suggest to us a probable history of gastric ulcer.

Twist of the pedicle of an abdominal tumor has several times given me much satisfaction as the cause of an acute abdominal pain, which was cured by a prompt laparotomy; extra-uterine pregnancy belongs in a similar class, though here the collapse and rapid pulse with the secondary blanching of the countenance, due to internal haemorrhage, are factors of much value in diagnosis. The most severe case of "ptomaine poisoning" to which I was once called turned out to be the rupture of an extra-uterine pregnancy in a woman well past forty years, who had never been pregnant to her knowledge; she recovered after laparotomy.

In lesions of this class, the differential diagnosis is often impossible, but fortunately the treatment is the same, laparotomy, the important point being to recognize that we have to deal with some definite organic lesion of the abdominal organs, and not with a severe case of colic, due to simple spasm.

I need hardly mention that acute pancreatitis should always be considered, though rarely definitely diagnosed; prompt laparotomy may cure even this so fatal disease, as in two cases to my knowledge, one a case seen in consultation in which the probable diagnosis of perforated gastric ulcer was made, and one that of a prominent Boston doctor, in which Dr. Richardson made, before operation, the probable diagnosis of haemorrhagic pancreatitis. I do not know on what grounds he made the diagnosis, or how certain he felt of the opinion given.

I wish especially to emphasize two lesions which may well give rise to much doubt, one comparatively common, and one rare, though worthy of consideration, namely purpura haemorrhagica, and acute nephritis.

I have seen on the surgical side of the hospital several cases admitted for appendicitis, or some other acute abdominal condition, that turned out to be purpura haemorrhagica; in such cases there are undoubtedly spots of purpura in the intestinal tract which give rise to the symptoms. The cases are made more doubtful, as there is often associated fever, and the patient may be pretty sick. The diagnosis is usually made by the finding of a few purpuric spots on the extremities, and possibly by blood in the urine, or haematemesis. A case seen in private consultation practice was considered as probably ulcer of the stomach, with possible perforation; the finding of many purpuric spots made the diagnosis clear, and recovery was complete. That the danger is real and not rare, is proved by the fact that in several cases laparotomy has been performed by good surgeons in patients who subsequently developed a perfectly typical purpura. The areas of purpura in the intestinal tract cause undoubtedly a certain amount of tenderness, hence the associated spasm which adds materially to the difficulty of diagnosis.

Acute nephritis: This disease has twice caused great doubt in my mind as to the existence of some acute inflammatory abdominal trouble. Once in a hospital case which was seen by several medical and surgical men, a mistake was made, and a useless laparotomy performed: fortunately the girl recovered. The case was published by the late Dr. John C. Munro, in a review of mistakes in abdominal surgery. Even after our mistake was proven, we all agreed that in a similar case we should advise the same treatment.

The other was seen in private consultation, an indefinite case of grippé, with much abdominal pain, and some tenderness across the upper part of the abdomen. I was called by a surgeon. The diagnosis was obscure, grippé was eliminated, and the diagnosis made by finding a very acute nephritis, with much blood, and many casts indicative of an acute Bright's disease. Complete recovery followed.

So I feel sure that though kidney disease does not cause backache, it may cause acute and severe abdominal symptoms.

From one point of view, the comforting statement may be made that laparotomy is the proper treatment for the severe cases of abdominal pain, not due to some colic or nerve disturbance. My experience in hospital practice is not that operation is done too often, but is neglected in cases that cannot recover under medical care.

4. "Referred pain." As I have already said, this kind of pain represents the most dangerous type of abdominal pain. I refer not to pain

due to lesion of some specific nerve, as in tabes, but to pain referred to the abdomen, when the lesion is situated far removed from the abdominal organs.

The most common cause of such pain is pneumonia. I have been several times called in consultation to give an opinion as to the wisdom of operation, when my diagnosis was a beginning pneumonia. A negative factor of importance is the high temperature of the early stages of pneumonia, and another factor of value, increased respiration, with the finding of an area of diminished respiration.

In a patient of my own, I watched with much anxiety a case of sudden abdominal pain, with secondary vomiting; no cough, but high temperature, in which definite signs of pneumonia did not develop for 36 hours. I have also seen several cases of perfectly typical pneumonia, in which laparotomy had been done for appendicitis within a day or so, not cases of lobular pneumonia, which might have been due to ether, but cases of normal lobar pneumonia.

Peritonitis is not a disease associated at the start with high fever, and opposite to acute pulmonary diseases, the pulse rate is increased out of proportion to the respiratory rate, and the height of the fever. The final diagnosis, of course, depends on the presence or absence of definite localized tenderness and spasm.

Acute attacks of heart trouble often give rise to similar doubts as to the existence of some acute abdominal trouble; and, also, though more rarely, that disease so difficult of diagnosis, acute pericarditis.

5. The most common acute inflammation of the internal organs—appendix, pus tubes, abscesses in the lower part of the abdomen, or of various new growths or tumors of the abdominal cavity.

Personally, I have no doubt that operation is the proper treatment for any definite inflammation of the appendix. I have never in my own practice, or in consultation, been able to recognize signs that could make a surgeon sure that he had to deal with a mild catarrhal trouble of the appendix that would speedily get well, and not with a localized trouble that would surely lead to rupture, and secondary peritonitis.

I have been sorry that I have not urged operation, but have so far not regretted that operation had been done for a supposed or probable appendix. Of course the older men have seen many a case of acute appendix recover promptly under medical treatment, but I know no safe rule to decide that one should wait.

If you feel that I have bored you with platitudes, and the recital of trite cases, please pardon me, as I have tried to present to you in short form the views of myself and my surgical colleagues on a matter of great importance, and one that has interested me much in a hospital service of twenty-five years.

Original Articles.

THE BENEFICIAL RESULTS OF PRE-NATAL WORK.

By MICHAEL M. DAVIS, JR., PH.D., BOSTON,

Director of the Boston Dispensary.

ORGANIZED effort for the reduction of infant mortality has usually begun, in the United States, with attempts to improve the care, feeding and milk supply of babies during the first year of life, with the special hope of diminishing the deaths from diarrhea and other gastrointestinal diseases which levy so heavy a toll of life, particularly during the warm months of the year. From this beginning in many cities, the campaign against infant mortality has broadened in two directions. On the one hand, it has been extended throughout the year, instead of being confined to the summer; it has come to deal with general hygiene of the babies and the family, and with other diseases than the gastrointestinal; it has, in some instances, been extended later than the first year of infancy.

On the other hand, the campaign has also been pushed back to the time of birth, and before it. Prenatal work is now a recognized part of the nationally organized campaign for the reduction of infant mortality. Since the aim of this paper is to present some of the results which it has achieved in certain sections of Boston, it may be well to begin by formulating the definite purposes and means of prenatal work:

1. By making proper medical examination, pelvic measurements, etc., of pregnant women, before confinement (when possible, some months before), to decide whether normal delivery is possible or likely, and to give such medical advice as may be indicated for the comfort and safety of all women, and in particular when hospital care and operation are necessary.

2. By visits from a trained visiting nurse and reports to the physician, during the course of pregnancy, to instruct the mother and father in the hygiene of pregnancy, and to make the best possible preparation of the home for the sake of the coming child.

3. By expert medical care at confinement, to minimize the risk of delivery to mother and child.

4. By frequent visits from the nurse during the two weeks or so following confinement, to provide needed bedside care to the mother and give the baby the best start possible.

The Instructive District Nursing Association of Boston has developed this branch of its service until its nurses now care for over two thousand cases annually. This is about one-tenth of all the births in Boston. In certain districts, such as the North and West Ends, the proportion rises as high as one-third, while in some of

the outlying sections the percentage is small. Table I gives this percentage for all wards of the city for the year 1914.

The medical service for the preliminary examination of the pregnant woman, and the obstetrical care at confinement, is provided for the District Nursing Association by private physicians to a certain extent, but in greater proportion by organized agencies.* Of these, the Boston Lying-in Hospital is the largest; in addition there are the Mount Sinai Hospital (recently closed), and the Committee on Prenatal and Obstetrical Care of the Women's Municipal League; the nurses of the District Nursing Association work with the physicians of all these agencies. A few visiting nurses are provided by local societies, doing prenatal work unconnected with the District Nursing Association, but the number of cases cared for by these is relatively few.

A type of public health work which has grown in recent years until it now reaches one in ten of the population that might possibly be affected by it, should have attained a point when its beneficial results can be demonstrated by statistics, as well as believed in by the faith that moves mountains. The present study has been made with the aim of estimating results. It covers the prenatal work carried on by the Instructive District Nursing Association in five wards of Boston, during the years 1914 and 1915. It is gratifying to find that, not only do we secure useful figures showing the amount and character of the work done for mothers and babies, but also evidence that a very substantial saving in infant lives has been achieved.

METHOD OF THIS STUDY.

We selected Wards 1 and 2, constituting East Boston (estimated population 58,500 in 1914), and 13, 14 and 15, constituting South Boston (population, 66,300). East Boston is a section in which the Out-Patient Department of the Lying-in Hospital does not work, while in South Boston this service has been considerably developed. The medical work in East Boston, in connection with the District Nursing Association, was done by the Committee on Prenatal and Obstetrical Care, of the Women's Municipal League (coöperating with the Maverick Dispensary), the Mount Sinai Hospital, and by private physicians. In South Boston, practically only the Lying-in Hospital and private physicians were concerned.

Every case which had received prenatal care by the District Nursing Association in these wards, during the years 1914 and 1915, was located in their records, and certain data tabulated therefrom. The cards from which these

tabulations were made were then taken to the office of the Registrar at City Hall and looked up in the records of deaths. All the cases in which babies who had prenatal care had died within one year after birth, were recorded. The age at death, and the cause as stated on the death certificate, were also tabulated.

Finally, the card records were taken to the office of the Baby Hygiene Association and compared with their index so as to ascertain the number of cases which had received the care of the milk stations of that organization, and the number which had not.*

EXTENT OF THE PRENATAL WORK.

In East Boston, in 1914, there were 2025 births recorded, of which 103, or 5%, received prenatal care. In 1915 the number of births was 1959, and the number of prenatal cases was 113, or 62/3%. In South Boston, there were 1769 births in 1914, and 250 cases (14.2%) received prenatal care. In 1915 there were 1725 births, of which 264 received prenatal care, this being 15.3%. The number of cases in each ward, the nationalities of the mothers, the number of pregnancies and the number of miscarriages are shown in Table II in the Appendix.

In giving prenatal care it is naturally desired to begin as long as possible before confinement, but this is not easy, because mothers often fail to appreciate the importance of seeking advice until very near the time of delivery. The figures just presented indicate that prenatal work, in proportion to the population, is increasing in South Boston and East Boston. They also show that progress is being made in getting at the mothers earlier in pregnancy. In 1914, one-fifth of the mothers had prenatal care for only a week before confinement, but in 1915 this proportion had sunk to one-eighth. On the other hand, the proportion of mothers receiving prenatal care for five weeks and over was only about 50% in 1914, and had risen to nearly 60% in the next year. Detail figures are given in Table III.

There has been considerable discussion as to the frequency with which the nurse should visit the home during the prenatal period. Ordinarily this would depend on circumstances, such as the mother's condition, the character of the home and other local details. But in general, a visit about every ten days is desired and expected according to the prevailing standard. The following table shows that this standard is maintained in a great majority of cases, and again indicates improvement in 1915 over 1914:

* The principles and methods of prenatal work have been outlined by a group of specialists, with Dr. Edward Reynolds as chairman, acting as an advisory body to the committee of the Women's Municipal League above referred to. Their statement was published in the BOSTON MEDICAL AND SURGICAL JOURNAL, April 29 and May 6, 1915.

* The work of collecting and tabulating the data was performed by Miss Mildred A. Davis and Miss B. H. Gallagher, students at Simmons College, to whom, as to their instructor, Prof. Sara H. Stiles, I am much indebted. Grateful acknowledgment is also made to Mr. Edward McGlehen, City Registrar, for access to the records, to Dr. William H. Davis, Statistician of the Boston Health Department, for birth statistics and for helpful advice; and to the Instructive District Nursing Association and the Baby Hygiene Association of Boston.

TABLE A.

AVERAGE PERIOD BETWEEN NURSES' PRENATAL VISITS TO THE HOME.			
	1914	1915	
Less than 7 days	57	59	
7 to 10 days	85	154	
10 to 14 days	109	134	
14 days and over	95	41	
Incomplete records	7	6	
	353	394	

The great majority of cases are delivered in the home. In 1914, 337 of the 353 cases were delivered at home, and in 1915, 376 out of 394. Only 9 cases were delivered at hospitals in 1914 and only 13 in 1915. Seven cases in the former year and 5 cases in the latter year showed incomplete records, and could not be tabulated in this respect.

Postnatal care by the nurses was given to almost all the cases delivered at home, viz., 335 cases in 1914 and 372 in 1915. The details of the postnatal care, as shown in Table IV in the Appendix, indicates that in the majority of cases a daily visit is made by the nurse for a period usually of ten days to two weeks. The woman, of course, saw the physician in her home, or at the clinic, as necessary.

To summarize:

Prenatal care in East Boston and South Boston, two sections of the city with an aggregate population of about 125,000, was given during 1914 to 9.3% of all births, and in 1915 to 10.7%. The prenatal care consisted of the medical examination of the expectant mother in the majority of cases by a specialist in obstetrics from some organized agency, and in the remaining cases by the family physician. The educational and the advisory visits of the nurse to the home began, in the majority of cases, more than five weeks before confinement, and were made at weekly to fortnightly intervals, up to the time of delivery. Confinement in almost all cases took place at home, less than 4% going to hospitals. Following confinement, intensive postnatal care by the visiting nurse, under the physician's supervision, was carried on for a period of between ten days and two weeks.

HOW SHALL RESULTS BE TESTED?

Now what are the results, and how shall we measure the results? We cannot measure the mothers' ease of mind, the comfort at and after confinement, the hygienic improvements wrought in the mothers' condition and in the homes. Results can be measured only by comparing concrete evidences in these prenatal cases with corresponding data of cases in the same districts who had not had the benefits of prenatal care. The only definite data that are available are the death records.

STILL-BIRTHS.

In 1914, of the 353 prenatal cases, there were seven still-births (no miscarriages). This is 2% of the living births. The proportion of

still-births to living births in Boston, as a whole, for the same year, was 4%. In 1915, there were 8 still-births (also one miscarriage) out of the 394 prenatal cases. This again is 2%, half that among the general population.

DEATHS AND DEATH RATES.

Of 346 living births, in 1914, 13 babies died within one year after birth. Table V in the Appendix gives each death by age, cause, and length of prenatal care. Thirteen deaths among 346 living births, gives a death rate of 37.5 per thousand. In the same wards for the same year, 1914, the death rate among the 3438 babies who had not had prenatal care, was 109.3, almost three times as high.*

Since prenatal work should be expected to reduce the large number of deaths of babies during the first month of life, the comparisons of this early period will be of especial interest. We have been able to make this comparison for two years, 1914 and 1915. The results are noteworthy. The actual deaths, by wards, on which these rates are based are given in Table VI, in the Appendix.

TABLE B.

COMPARISON OF DEATH RATES, PRENATAL WITH NON-PRENATAL CASES, 1914 AND 1915, IN FIVE WARDS OF BOSTON.

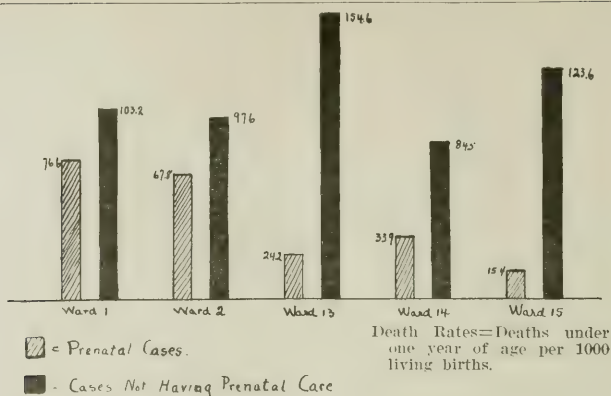
DEATH RATE UNDER ONE WEEK OF AGE		DEATH RATE UNDER ONE MONTH OF AGE	
PRENATAL CASES	CASES NOT RECEIVING PRENATAL CARE	PRENATAL CASES	CASES NOT RECEIVING PRENATAL CARE
1914 11.5	34.3	17.3	46.5
1915 15.5	27.9	25.9	39.7

Death rates are per 1000 living births.

These figures mean that when we compare the deaths of babies in 1914, under one week of age, we find that the death rate of those who had not prenatal care was *three times as high* as among those who had. In 1915 the death rate was *twice as high*. The same proportions hold in both years, for the deaths under one month of age.

Examination of the detail figures by wards, in Table VI of the Appendix, confirms these statements. The death rate for the first year of life, in every one of the five wards, shows a reduction, usually very large, for the prenatal cases in 1914, as compared with those not having prenatal care. This is graphically portrayed in the following chart.

* In making these and the following comparisons, one point must be borne in mind although it does not, in any material way, affect the value of the figures. The deaths of babies among the prenatal cases, born in 1914, are obtained by following each individual baby throughout the first year of its life to see if it died during that period. Some of the thirteen prenatal cases who were born during 1914, but who died during their first year, died in 1915, not during 1914. The deaths of the babies not receiving prenatal care are simply the deaths which occurred during 1914. Some of the babies who died during that year were, of course, born during 1913. This point is of more interest as a matter of curiosity, for it does not substantially affect the comparison of rates.



PRENATAL VERSUS NON-PRENATAL DEATH RATES, IN 5 WARDS, 1914.

The death rates for the individual wards among the prenatal cases are based on too few individuals to be trustworthy for the age periods under one week and under one month, but are reliable for the longer age period of one year. At this time, we cannot make a comparison of the death rate *under one year* for the prenatal cases of 1915. For that we must wait until the end of 1916. Then we shall look up those babies who received prenatal care and who were born during the later part of 1915, and ascertain whether or not they were alive at the end of their first full twelve months. The comparison of the 1915 babies who died up to the age of one week, or one month, can, however, be made now, without waiting until the end of the year, and these have, therefore, been presented.

In 1914 we find a further interesting fact, namely, that the death rate among the prenatal cases, between the ages of one month and one year, was only 20.2 per thousand, while among the babies of the same wards not receiving prenatal care, the death rate between the ages of one month and one year was 62.8 per thousand. The same comparison in 1915 cannot be made until after the close of 1916. A further paper will then be published on this point, with the view of bringing the effect of the prenatal work, so far as indicated, upon the infant death rate after the close of the first month of life. Just one comment seems pertinent now, namely, that the medical advice and the nursing care during the prenatal period would doubtless increase the amount and lengthen the period of breast feeding, as compared with the mothers not receiving prenatal care. This fact alone would have a very large influence upon the death rate of babies between the first and the twelfth month of life.

CAUSES REDUCING THE INFANT DEATH RATE.

It is one thing to show a reduction in death rates, and quite another thing to determine the

causes which brought it about. How far are the large reductions in death rate, indicated by this study, due to the prenatal work? We may be certain that the lowered death rates during the first week and first month of life are not due to post-natal care given by milk stations or other agencies, inasmuch as these practically never reach babies until a later period. The examination made, as stated, of the files of the Baby Hygiene Association, also showed that less than 20% of all the prenatal cases, in either year, were taken care of by that Association. We do not know of any organized agency which did work with any considerable proportion of these prenatal cases in these wards during the two years covered by this study. The nurses of the Boston Department of Health visit all babies shortly after birth; their influence could not, therefore, exert a differential influence in favor of any one group of babies.

The question arises whether the prenatal work selects a group of mothers who, for one reason or another, would naturally have unusually healthy babies. Two points may be considered pertinent,—the economic condition of the families, and the intelligence of the mothers. As to the first point, the prenatal cases are, in fact, drawn mostly from families of low income. Patients of any social class are accepted and, as already stated, a certain number of patients of moderate means, employing their private physicians are found among the prenatal cases of the District Nursing Association. But the proportion of families in East and South Boston employing their own private physicians is small, over four-fifths of the cases receiving the medical service practically free, through the Boston Lying-in Hospital and other agencies. Generally speaking, then, the economic conditions of the homes are not favorable to a low infant death rate. As to intelligence, it is probable that women of unusually low intelligence would not seek or be interested in accepting the prenatal work. On the other hand, we have no rea-

son to believe that the mothers who receive prenatal care, represent any higher order of intelligence than the *average* of their locality. The mixture of nationalities, shown in Table I, indicates that there is no preponderance of any one race group which would suggest any special influence on the death rates.

CONCLUSIONS.

1. A comparison of the death rates of 731 babies whose mothers received prenatal care in five wards of the city of Boston during the two years 1914 and 1915, shows that the death rates were reduced to one-half or one-third those found among babies not receiving prenatal care in these wards during the same period.

2. This reduction is found among babies during the first week of life, during the first month of life, and during the first year of life, taken as a whole.

3. The proportion of still-births, in each year, is only half that among the general population.

4. As it is known that only a small proportion of these babies received any other organized medical or nursing supervision, the reduction in death rate is apparently to be attributed to the prenatal work.

APPENDIX.

TABLE I.

I. D. N. A. PRENATAL CASES IN PROPORTION TO BIRTHS IN BOSTON, 1914.

No. of Ward	BIRTHS, 1914	I. D. N. A. PRENATAL CASES, 1914	% PRENATAL CASES OF BIRTHS
1	871	40	4.59
2	1154	69	5.97
3	324	16	4.93
4	302	6	1.98
5	263	14	5.77
6	1875	176	9.33
7	359	127	32.59
8	1069	545	51.02
9	700	242	34.57
10	315	17	5.39
11	408	165	40.44
12	425	27	6.35
13	661	126	19.06
14	540	63	10.86
15	518	70	13.51
16	608	26	4.27
17	654	27	4.12
18	526	65	12.35
19	752	55	7.04
20	1371	40	2.91
21	608	19	3.12
22	685	35	5.12
23	756	19	2.51
24	1111	21	1.89
25	720	...	...
26	424	15	3.53
Unknown (ward) ..	71	...	...
Non-residents ..	1303	...	...
Unknown ..	52	...	...
All Boston	19462	2025	10.40

TABLE II.

PRENATAL CASES OF THE INSTRUCTIVE DISTRICT NURSING ASSOCIATION IN WARDS 1, 2, 13, 14 AND 15 OF BOSTON, MASSACHUSETTS, 1914 AND 1915.

	1914	1915
Total cases	353	394
WARD		
1	40	79
2	63	51
13	126	130
14	59	70
15	65	64
TOTAL	353	394
BIRTHPLACE OF MOTHER.		
Ireland	60	62
Italy	63	52
Lithuania	21	17
Poland	20	22
Russia	42	65
United States ..	104	111
Other Countries .	40	47
Not recorded .	3	18
TOTAL	353	394
NUMBER OF PREGNANCY.		
First	52	89
Second	54	75
Third	53	59
Fourth	55	51
Fifth	40	36
Sixth	31	33
Over six	62	49
Not recorded	2	2
TOTAL	349	394
NUMBER OF MISCARRIAGES.		
None	296	340
One	27	32
Two	15	11
Three	4	3
Over three	4	5
Not recorded	7	3
TOTAL	353	394

TABLE III.

PERIOD DURING WHICH PRENATAL CARE WAS GIVEN, 1914-1915.

WEEKS BEFORE CONFINEMENT	1914	1915
1 week or less	76	48
2 to 5 weeks	90	113
5 weeks and over .	180	227
Incomplete records	7	6
TOTAL	353	394

TABLE IV.

POSTNATAL CARE.

Number of cases	1914	1915
335	372	
LENGTH OF TIME		
Less than 1 week	17	37
1 week	58	52
More than 1 week	260	283
TOTAL	335	372
NUMBER OF VISITS		
One a day	175	222
Less than one a day	160	150
TOTAL	335	372

TABLE VI.

COMPARISON OF DEATHS UNDER ONE YEAR OF AGE, IN WARDS 1, 2, 13, 14 AND 15, BOSTON, MASS., IN 1914 AND 1915, WITH THE DEATHS UNDER ONE YEAR OF AGE AMONG THE INSTRUCTIVE DISTRICT NURSING ASSOCIATION PRENATAL CASES IN THE SAME WARDS AND SAME YEARS.

WARDS		BIRTHS	ALL CASES				CASES HAVING I. D. N. A. PRENATAL CARE				CASES NOT HAVING I. D. N. A. PRENATAL CARE			
			DEATHS				DEATHS				DEATHS			
			UNDER 1 Yr.	UNDER 1 Mo.	UNDER 1 Wk.	BIRTHS	UNDER 1 Yr.	UNDER 1 Mo.	UNDER 1 Wk.	BIRTHS	UNDER 1 Yr.	UNDER 1 Mo.	UNDER 1 Wk.	
1	1914	871	89	43	29	39	3	12	1	832	86	41	28	
	1915	830		38	28	77				753		36	27	
2	1914	1154	111	43	24	59	4	12	2	1095	107	41	22	
	1915	1129		34	21	50				1079		32	20	
13	1914	661	86	27	24	124	3	0	0	537	83	27	24	
	1915	684		26	15	126				558		21	12	
14	1914	580	46	23	18	59	2	1	1	521	44	22	17	
	1915	551		20	18	69				481		19	17	
15	1914	518	57	30	27	65	1	1	0	453	56	29	27	
	1915	490		23	16	63				427		23	16	
TOTAL	1914	3784	389	166	122	346	13	6	4	3438	376	160	118	
	1915	3684		141	98	385				3298		131	92	

TABLE V.

DEATHS DURING FIRST YEAR OF AGE AMONG BIRTHS FROM I. D. N. A. PRENATAL CASES IN WARDS 1, 2, 13, 14, AND 15, BOSTON, MASS.

A. BIRTHS IN 1914.

LIST OF DEATHS	AGE AT DEATH	CAUSE OF DEATH	LENGTH OF PRENATAL CARE
1	15 hrs.	Premature birth	5 weeks
2	3 dys.	Congenital debility	11 " (3 mos. approx.)
3	3 "	Convulsions	2 "
4	5 "	Instrumental delivery	5 "
5	14 "	Lobar pneumonia	20 " (5 mos. approx.)
6	17 "	Infantile jaundice	4 "
7	2 mos.	Tubercular peritonitis	12 " (3 mos. approx.)
8	3 "	Lobar pneumonia	1 "
9	5 "	Peritonissilar abscess	3 "
10	5 "	Broncho-pneumonia	6 "
11	6 "	Broncho-pneumonia	4 "
12	7 "	Colitis	4 "
13	10 "	Broncho-pneumonia	1 day
1	Stillbirth		2 weeks
2	"		5 "
3	"		9 "
4	"		4 "
5	"		4 "
6	"		15 " (4 mos. approx.)
7	"		3 "

B. BIRTHS IN 1915.

LIST OF DEATHS	AGE AT DEATH	CAUSE OF DEATH	LENGTH OF PRENATAL CARE
1		Craniotomy	6 weeks
2		Breech delivery	9 "
3		Uterine asphyxiation	5 "
4	2 dys.	Premature birth	1 "
5	2 "	Toxemia fol. eclampsia	1 day
6	2 "	Cerebral edema	3 weeks
7	11 "	Septic inf. newborn	6 "
8	14 "	Infantile eclampsia	7 "
9	20 "	Premature birth	1 "
10	25 "	Defective skull	12 " (3 mos.)
11	1 mo.	Broncho-pneumonia	22 " (5½ mos.)
12	4 mos.	Lobar pneumonia	5 "
13	4 "	Broncho-pneumonia	5 "
14	5 "	Broncho-pneumonia	4 "
15	6 "	Marasmus	6 "
16	6 "	Broncho-pneumonia	6 "
17	6 "	Inf. diarrhea	11 " (3 mos. approx.)
18	6 "	Pneumonia	7 "
19	10 "	Tubercular meningitis	1 "
20	11 "	Laryngeal diphtheria	1 day
1	Stillbirth		3 weeks
2	"		9 "
3	"		1 week
4	"		1 "
5	"		2 weeks
6	"		4 "
7	"		6 "
8	Miscarriage		11 "

STUDIES OF THE STOMACH IN
SYPHILIS.*

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THE wide use of serum tests in the last five or six years has permitted us to discover a greatly increased number of persons with syphilis, some of whom have prominent symptoms referable to the stomach, or actual stomach lesions.

In such a group of cases we have studied the functions of the stomach, the coincidence of syphilis with other diseases of the stomach, its relation to peptic ulcer, and the symptomatology.

Material.—In a group of 600 cases of syphilis with strongly positive Wassermann reaction (largely patients at the Boston City Hospital) with the addition of a small number of private patients) were found 44 with prominent stomach symptoms, after excluding patients with hepatic cirrhosis, gumma of liver, nephritis and tabes.

In 35 cases no definite lesion of the stomach was proved, in 9 actual syphilitic or coincident lesions were found (ulcer, gumma or cancer).

It is often impossible to distinguish between syphilitic and coincident stomach lesions during life. Two cases were proved cancer at autopsy, five had ulcer, syphilitic or coincident, two had syphilitic induration or gumma.

In the first group with no proved lesion of the stomach, there were no characteristic symptoms. The most common were epigastric distress, burning or pain, occasionally relieved by food or alkalis; vomiting, anorexia, loss of weight, usually moderate. The symptoms were as often intermittent as persistent, and the course not steadily progressive. No attempt was made to classify the cases by variations in the history.

The gastric secretion after the Ewald breakfast was within normal limits; in 23 cases (65%); hyperacid in 5 cases (15%); and subacid in 5 cases (15%); while 2 cases (5%) showed no free HCl. Only one case showed 12-hour food residue. There was no blood in stomach contents or feces with the Benzidin test. These changes in gastric secretion are not distinctive and are much like those in any functional or toxic group of cases of the same age and sex in which digestive symptoms are common, for example, neurasthenia, or tuberculosis.

There may have been a chronic gastric catarrh in some of the cases but with no positive signs. Since the free use of the Wassermann test many cases with digestive symptoms and positive serum are classed as syphilis of the stomach, probably without reason.

In the group of nine cases with syphilis and

proved stomach lesions, the classification has been very difficult. Two cases were proved by autopsy to be cancer of the stomach, but during life it was absolutely impossible to make a positive diagnosis between syphilis and cancer by history, physical examination, lack of gastric secretion, x-ray defect or even the appearance of the stomach at operation. One was a plum-sized medullary cancer, the other a scirrhus, colloid cancer, of leather bottle type. In such doubtful cases a relatively benign course and the combination of quite good health with a large stomach lesion (often shown best by the x-ray) always suggests syphilis.

Occasionally at operation the appearance of a hard, well-defined plaque-like lesion, or a dense, nodular tumor arising from a diffusely infiltrated stomach wall, together with the serum reaction, may strongly suggest syphilis.

The diagnosis of syphilis of the stomach has not been and will not be absolute as a rule. Few autopsies occur. The surgeon tends to avoid operation and especially the resection of tumors in patients with strong positive Wassermann reaction, and finally, the diagnosis usually cannot be made at operation. No doubt a considerable number of syphilitic stomach tumors have been treated surgically in the past without recognizing their syphilitic nature.

The remainder of the cases with definite lesion in the stomach fall into two groups, according to the character of the lesion found.

Class A chronic ulcer type and Class B chronic indurative or gummatous type.

There were five cases in Class A, with chronic ulcers involving the pylorus, antrum or lesser curvature of the stomach, and one median ulcer with adhesions causing an hour-glass deformity. In one case there were three ulcers. There was obstruction of the pylorus in three cases and gastro-enterostomy was performed in these, also in the hour-glass stomach.

In Class B were two cases, one with leather bottle induration of the whole stomach, one with gumma in the antrum the size of a large plum; the pylorus was not obstructed in either.

Taking these two groups of seven patients together, the ages were 23 to 63 and averaged 44 years. The patients were all in the tertiary stage. The digestive disturbance appeared from 8 to 24 years after the initial lesion, in the 5 cases where this was determined. Six cases had had some antispecific treatment but in only one had it been thorough. The Wassermann was triple positive in all. The duration of all gastric symptoms averaged five years, and of the present gastric disturbance eight months.

The symptoms consisted of distress, pain or soreness in the epigastrium with irregular vomiting, often distress on the empty stomach, relieved by food or alkalis, resembling much the irregular course of recurrent gastric ulcer; later the distress or pain was more constant.

In the five ulcer type cases the free HCl aver-

* Read by title at the 31st annual meeting of the Association of American Physicians, Washington, D. C., May 9, 1916.

aged 25 with minimum of 8 and maximum of 40; the total acid averaged 46 with minimum of 15 and maximum of 70; 4 cases showed 12-hour retention of food.

The other 2 cases (Class B) showed no free HCl in the gastric contents and a total acidity of 14 and 16. There was no 12-hour food retention.

Oecult blood was found by the Benzidin test in stomach contents and stools in two cases. The x-ray was very valuable in giving the shape, size and position of the lesions. The contour in Class A was exactly that of chronic peptic ulcer with its complications (obstruction, hour glass) and in Class B of cancer, of the cirrhosis or medullary type.

Frequency and Relation to Peptic Ulcer.—It is very difficult to judge the frequency of syphilis of the stomach. Some regard every dyspepsia in a syphilitic as a sign of syphilitic gastritis. It seems far more likely that these dyspeptic symptoms do not arise from gastric lesions but accompany the primary disease, as dyspepsia in tuberculosis is not due to any form of tubercular lesion of the stomach but to the toxemia.

Actual syphilis of the stomach is evidently one of the rarest types of syphilis. It is certainly striking that in a large hospital like the Boston City Hospital, admitting daily to its wards one or two patients with a triple positive Wassermann reaction, that so very few are found to have any organic lesion of the stomach, including possible coincident lesions. This agrees with the autopsy figures of Chiari and the later figures of Symmers, who found in 314 autopsies in syphilis only one genuine syphilitic ulcer of the stomach.

Syphilis was formerly looked upon as an important cause of chronic gastric ulcer. Lang and Neumann judged about 20% of gastric ulcer syphilitic, and Engel about 10%. This is disproved by serum tests. Syphilis is a rare cause of ulcer. In less than one-half of one per cent. of 179 private cases of proved peptic ulcer was the Wassermann positive, and in less than two per cent. of 204 hospital cases. It must be remembered that this figure for peptic ulcer in hospital patients is distinctly less than the per cent. of syphilis in the total hospital cases, which is, at least, four or five. Smithies found a positive Wassermann reaction in 1.3 of 1% of a series of proved ulcer cases.

It has been impossible to decide whether the cases of chronic ulcer type (Class A) had a syphilitic or coincident ulcer of the stomach. This is true of some of the cases recently reported by Downes and LeWald. No spirochetes were found in glands and stomach tissue resected in two of our cases.

Chronic ulcer and syphilis are both common; they may be coincident without relation in at least a portion of the few cases found. An ordinary peptic ulcer may occur in syphilis with

the same frequency at least as in other persons. An ulcer in a luetic may improve under treatment without proving it a syphilitic ulcer.

On the other hand the recent work of Warthin and others suggest that in the active stages of syphilis there is a spirochetosis of all the viscera, and that every syphilitic has patches of fibrosis scattered through the tissues, as has been proved in the heart, aorta, pancreas, etc. The stomach may be involved in such a process and fine syphilitic lesions be later proved more frequent than they appear now.

Symptoms.—There are no characteristic symptoms of syphilis of the stomach, as is seen in the summary given in these cases. There is usually a long history of intermittent symptoms later becoming more constant. They sometimes resemble those of chronic catarrh, or ulcer, or growth, with or without obstruction of the pylorus. Pain is common; gross hemorrhage is infrequent, possibly because of obliterative endarteritis. It is useless to try to classify cases strictly on the basis of symptoms. There is usually much longer duration of symptoms and less cachexia and loss of weight in proportion to the size of tumor than in cancer. They behave like benign not malignant lesions. It is a disease of middle life; the age is below the average for cancer.

It is evident that stomach symptoms in tertiary syphilis are rarely the expression of a gumma or ulcer. Brugsch and Schneider suggest that they may be largely due to the irritation of spinal nerve roots similar to the crises of tabes but more latent. Changes in the abdominal aorta may give local pain and tenderness.

Signs.—In the cases without organic lesion of the stomach the gastric secretion has proved normal in the majority and below normal or absent in 20%. This is quite different from Neugebauer's figure in the secondary stage of syphilis, namely, 62% subacidity and 18% achylia.

Brugsch and Schneider have stated that an ulcer in tertiary syphilis is usually associated with subacidity or achylia. On the contrary we found normal or increased secretion in little more than half our cases of ulcer type, perhaps, because the majority had pyloric obstruction. Our data agree with those of Smithies in a larger series. The two cases of indurative gumma type (Class B) had no free HCl. In reporting secretion we must always take account of stenosis and the age of the patient. In obstructive cases the food is long retained and the added stimulus gives normal or increased secretion. In others the stomach empties so fast after the test meal that there is little chance for the stimulus of food to develop HCl. The reduced acidity is probably not mechanical alone, a systemic disease like syphilis influences gastric chemistry in more than local ways.

Oecult blood was found in gastric contents

or stools in two cases. Palpable tumor was found in one case only.

Diagnosis.—The literature is large and indefinite and case reports before 1910, not including the Wassermann test and the x-ray, have minor value. In the older cases the diagnosis was often accidental and made only at autopsy or operation, or as the result of a random therapeutic test.

The difficulties of diagnosis have been sufficiently emphasized between syphilitic lesions and peptic ulcer or cancer. We cannot depend on symptoms, on changes in secretion, on the contour or site of the lesion, or its appearance at operation. Ulcer is an anatomical not an etiological diagnosis. The combination of ulcer signs and acidity does not favor syphilis more than it does cancer.

Even the relief of symptoms by treatment is not a sure guide in diagnosis, though, if plaques, large indurated areas, hour-glass deformity, tumors, easily demonstrated by x-ray or operation on a patient with positive Wassermann have previously resisted treatment and fade away under antisyphilitic drugs, we have valuable evidence that the lesion was specific. While the clinical picture does not differ from other lesions, the results of treatment usually do. In doubtful abdominal cases think of syphilis.

The x-ray has proved of great value in locating the lesions exactly and following their changes under treatment accurately. We no longer need depend on the palpation of a rare tumor and its disappearance under the finger.

Prognosis. Results of Treatment.—The prognosis is about that of syphilis in general. The results of treatment are usually prompt and striking; the majority improve, even cases with severe complications like stenosis, perforation and hemorrhage. A good portion are cured, but a small group do badly in spite of thorough treatment. Gummata and induration melt away, but scar tissue does not dissolve and some deformity usually persists in the cases with gastric lesions. Gastric secretion may remain absent after symptoms have disappeared.

In the 37 cases without definite stomach lesion 16 (43%) are well; 18 (48%) improved and 3 (9%) no better.

In our 7 cases with stomach lesions (omitting the 2 cancer cases) 3 (43%) are well, and 4 (57%) greatly improved. In this group there were gains in weight of 15 to 52 pounds, with an average gain of 31 pounds.

The prognosis was called "extremely good" in summaries of older reported cases. This may be due to the use of the therapeutic test in diagnosis, since only cases which improved rapidly were considered syphilis. Some caution must be used in prognosis, since in spite of the remarkable results in individual cases less than

one-half the patients were wholly freed from dyspeptic symptoms.

REFERENCES.

- Brugseh and Schneider: Berl. klin. Woch., 1913, lili, pp. 601-606.
Chiari: Internat. Beitr. z. wiss. Med. Berlin, 1891, ii, p. 211.
Downes and LeWald: Jour. A. M. A., 1915, lxi, pp. 1824-1829.
Engel: Allgem. Patholog. Anatomie, Wien, 1863.
Lanc: Wiener Med. Presse, 1885, No. 11.
Neumann: Nothnagel's specielle Pathol. u. Therapie, B. 1, xxiii, p. 351.
Neugebauer: Wien. klin. Woch., 1914, xxvii, 1, p. 844.
Smithies: Journal A. M. A., 1915, Vol. lxi, pp. 572-575.
Symmes: Jour. A. M. A., 1916, Vol. lxxi, p. 1457.
Warthin: Ann. Jour. Med. Sci., 1916, Vol. ciii, p. 157.

RESULTS OBTAINED BY THE CLASS METHOD OF HOME TREATMENT IN PULMONARY TUBERCULOSIS DURING A PERIOD OF TEN YEARS.*

BY JOSEPH H. PRATT, M.D., BOSTON.

NINE years ago I presented before this Association a report of the work of the first tuberculosis class. In that paper, and in others which I have published, a full description is given of the methods employed.

The Emmanuel Church Tuberculosis Class was organized July 1, 1905. Its object was the sanatorium treatment of consumptives in their own homes. From the outset insistence was placed upon rest in the open air. The patients were provided with facilities for taking the out-of-door treatment. They lived on porches or in tents or shacks erected sometimes on roofs and sometimes on the ground. When the condition of the patients permitted they came to the class meetings which were held weekly. As time passed more and more insistence was placed upon absolute rest in the active stage of the disease even in non-febrile patients. The patients kept their own records of temperature and pulse, entered in record books details of their daily life, such as the hours out of doors, symptoms, and the amount of exercise, when exercise was allowed. The home visiting was done entirely by the class nurse. Patients in all stages of the disease were admitted. No one was refused who promised to follow instructions faithfully, but strict obedience to the rules and regulations was required.

During the first ten years 206 patients were treated as regular members. This number included all those who attended at least three meetings and followed the treatment for a month. Eleven are excluded from the list because they attended only one or two meetings. Three were examined and would have been admitted if they had not refused to follow the required treatment. Four patients were so ill when they sought admission that they were never able to attend a meeting. These were

* Read at the Twelfth Annual Meeting of the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., May 12, 1916.

instructed at home in the rest treatment and were cared for until their death. Two were referred to other organizations after having been less than three weeks in the class. Six were admitted to the class with the diagnosis of pulmonary tuberculosis, but on further study, were found to be suffering from other diseases.

From July, 1906, to July, 1914, 189 patients were admitted. The later careers of all but two of these have been traced. The condition of those living on July 1, 1915, was as follows: Well and working, 104; living, but unable to work, 14. There have been 69 deaths. Twenty-nine of these deaths occurred while the patients were members of the class. Fifty-six per cent. of all those admitted to the class in the nine years were restored to health. The majority of these were beyond the incipient stage of the disease when they sought treatment in the class.

When patients are treated in their homes it is possible to keep them much longer under supervision than when they are treated in a sanatorium. All of the patients who remained in the class until their health had improved to such an extent that in my opinion the activity of the disease was arrested, and they were able to return to work, were graduated from the class. The results in this group of cases are especially interesting. Up to July 1, 1915, there had been 87 of these graduates. The careers of all but one of these have been traced.

TABLE I.

DATE OF GRADUATION	NO. OF GRADUATES	DATE OF LAST REPORT	WELL AND WORKING	NOT TRACED	PER CENT. WELL.	YEARS SINCE GRADUATION
1906	9	1915	5	—	56	9
1907	9	1915	7	1	78	8
1908	13	1915	12	—	92	7
1909	16	1915	13	—	81	6
1910	11	1915	10	—	91	5
1911	7	1915	6	—	86	4
1912	10	1915	9	—	90	3
1913	5	1915	5	—	100	2
1914	7	1915	7	—	100	1
	87		74			

81% of those who graduated between 1906 and 1911, inclusive, were well and working July 1, 1915.

58% of those who graduated between 1906 and 1914, inclusive, were well and working July 1, 1915.

It is interesting to note that eight of the nine graduates in 1906 had tubercle bacilli demonstrated in the sputum while under treatment. The one patient with a negative sputum died of consumption. Two of the four deaths were due to acute lobar pneumonia, and they occurred in men who had been free from symptoms of pulmonary tuberculosis for a long time.

Out of 106 patients in whom tubercle bacilli were found in the sputum 55 are living and 49 are dead. In the histories of 52 patients, there

is no record of the sputum examination. Of these 35 are living and 16 dead. In 53 patients, all the sputum examinations were negative. Of these 47 are living and 5 dead.

We have traced 69 of the 72 former members who left the class for different reasons. Eight withdrew from the class against advice and returned to work, because they considered themselves sufficiently recovered to do so. Their after careers proved they were right. Five reported well on July 1, 1915, 2 living but not well, 1 not traced. Eleven moved away from Boston, usually to the country; 3 are well, 1 living, 7 died. Fifteen were dismissed for disobedience of the rules; 6 are well, 1 living, 8 died. Two were dismissed for drunkenness; both died. Eighteen dropped out of the class voluntarily; 7 are well, 4 living, 7 died. Two were transferred to hospitals; 1 died, 1 untraced. Eight left the class to enter sanatoriums; 1 is well, 4 living, 3 died. Two were transferred to another tuberculosis class; both died. Three moved to Colorado, California and New Mexico; 1 well, 2 died. One left the class owing to a complicating disease, arthritis deformans, and died several years later.

I wish to emphasize the importance of prolonged rest out of doors in obtaining the excellent results recorded in this report. During the first two years I allowed my patients to take graduated exercise in the form of walking as soon as they were free from fever, if the pulse was slow and the weight was increasing. Since then I have prolonged the rest treatment and have not allowed exercise until I considered the activity of the disease had been definitely checked. The patients were often kept at rest for months, but I allowed them if they had no fever to go to the lavatory, and usually permitted them to take their meals at the table. During the early years reclining chairs were largely used, but later the rest treatment was chiefly carried out with the patient in bed.

A comparison of the results obtained by the two methods of treatment shows that the strict rest treatment yields the better results.

I have taken the first thirty cases in which the exact date that exercise was begun was recorded on the records, and analyzed the group. This includes the patients admitted from July, 1905, up to November, 1906. The average time that exercise was begun, taking the mathematical mean, was seven weeks. The mean duration of treatment was 7 1-2 months. In 17, or 56%, of the cases, the disease was apparently arrested. Eleven, or 36%, were well and working on July 1, 1915. In this group 58% of the cases with positive sputum recovered; 37% of these were well, July 1, 1915.

In the second group of 30 cases admitted between July, 1908, and March, 1911, the average time (mean) at which exercise was begun was 4 months, and the duration of treatment 8 1-2 months. In 23, or 76 1-2%, the

disease was apparently arrested. Twenty-two were living July 1, 1915, and 20, or 66 2-3%, were working and considered themselves well. The disease was arrested in 63 1-2% of the patients with positive sputum.

TABLE II.
EFFECT OF PROLONGED REST ON RECOVERY IN
PULMONARY TUBERCULOSIS.

30 CASES	EXERCISE BEGIN	DURATION OF TREATMENT	DISEASE ARRESTED	DISEASE ARRESTED IN PATIENTS WITH POSITIVE SPT.	% WELL JULY 1, 1915.
GROUP I 1905-1906	7 wks.	7½ mos.	56	36	58
GROUP II 1908-1911	4 mos.	8½ mos.	76½	66⅔	63½

The cases in the two groups have been analyzed according to the stage of the disease on admission to the class. In order to remove the personal equation, Dr. P. Challis Bartlett, who for three years was superintendent of the Rutland State Sanatorium, has kindly gone over the records, and the arrangement of the cases in the various stages is not my classification but that of Dr. Bartlett.

TABLE III.

GROUP I. (ADMITTED 1905-1906).

		JULY, 1915		
		WELL	LIVING	DEAD
1st stage	.... 5	4	1	1
2d "	.... 13	7	6	6
3d "	.... 12	3	1	8

GROUP II (ADMITTED 1908-1911).

		JULY, 1915		
		WELL	LIVING	DEAD
1st stage	.... 11	11	0	0
2d "	.... 13	6	2	5
3d "	.... 6	2	4	4

We are now able to compare the after-results obtained by our plan of home treatment for poor patients with those obtained by the sanatorium treatment. In two leading English sanatoria for well-to-do patients, 52% of the patients discharged were well or alive 4 to 8 years afterwards (Bardwell). Among a large series of patients treated in the Massachusetts state sanatoria Miss Farmer found that 24% were leading normal lives 4 to 7 years after their discharge. Of our 88 patients who left the class 4 to 8 years ago 60% are well and working, and 66% are alive.

The expenses of the class have been borne by the Emmanuel Church of Boston, which has given me during the ten years the services of a nurse, and has provided some money for aiding patients with scanty means to lead the outdoor life. The total expense has been about \$16,500. I have been helped by half a dozen assistants, but I am the only one who was connected with the class in the beginning that is still attached to it.

Our results, I am sure, would be better if I had been able to give more time to the treatment and especially the after-care of the patients. I am not a specialist in tuberculosis, and this has been simply a part of my work in internal medicine. I have never visited the patients in their homes. I have seen them only in the class meetings and at the time the physical examinations were made.

In closing, I wish to make a few statements in regard to the financial returns. The ex-patients during the year ending July 1, 1915, earned, according to carefully collected statistics, \$50,000. The total earnings of the ex-patients since leaving the class amount to about \$250,000. The first two graduates have earned between them \$18,000, which is more than the entire expense of the class during the period of ten years.

THE CORRELATION BETWEEN THE SYSTOLIC BLOOD PRESSURE AND RE- FLEX VASOCONSTRICTION OF THE SKIN (ANEMIC DERMOGRAPHY.)

BY EDWARD A. TRACY, M.D., BOSTON.

REFLEX vasoconstriction of the blood vessels of the skin,—anemic dermatography, as it is termed in the German literature,—and which is observed as a reflex to the irritation of stroking the skin, I have found to be the second component of the normal reaction to stroking the skin, the first component being a brief lasting vasodilation. A paper describing the normal reaction and giving its causation (based upon experiment and reasoning) has appeared in this JOURNAL (August 11, 1916). In that paper it was shown that reflex vasoconstriction is caused by the action of nerve stimuli coming over the sympathetic fibrils, together with adrenin in the blood stream.

This paper is based upon a study of 125 cases. The systolic blood pressure is noted in each case, together with the reflex vasoconstriction valuation taken at the same time. The cases are divided into three series: the first consisting of cases in which the blood pressure was under 125; the second consisting of cases in which the blood pressure was between 125 and 135; the third consisting of cases in which the blood pressure was above 135.

SERIES I.

CASES OF BLOOD PRESSURE UNDER 125, TOGETHER WITH
REFLEX VASOCONSTRICTION VALUATION OBSERVED
AT THE SAME TIME.

CASE	BLOOD PRESSURE	REFLEX VASO- CONSTRICTION VALUE
1.	124	5 min. 40 sec.
3.	124	5 " 15 "
5.	114	2 " 15 "
7.	114	2 " 25 "

Case	Blood Pressure	Reflex Vaso-constrictive Value
8.	114	2 min. 40 sec.
9.	120	6+ min.
10.	114	2 min. 20 sec.
11.	120	4 " 5 "
12.	110	6 "
13.	110	3 "
15.	112	4 "
16.	112	3 "
18.	110	2 " 30 "
19.	120	4 " 45 "
21.	120	3 " 30 "
23.	122	5 "
24.	124	2 min. 20 sec.
25.	114	2 " 15 "
26.	118	1 " 45 "
27.	120	2 "
29.	106	1 min. 25 sec.
31.	110	2 " 20 "
32.	106	50 "
34.	124	3 "
35.	122	3+ min.
36.	110	3 min. 40 sec.
37.	110	6+ min.
38.	120	2 min. 15 sec.
39.	118	3 "
40.	110	3 "
41.	120	4 min. 5 sec.
42.	110	6 "
43.	114	3 "
44.	120	3 min. 30 sec.
45.	100	1 "
46.	110	3 "
47.	114	2 min. 40 sec.
48.	110	7 "
50.	120	2 "
51.	118	3 "
52.	120	2 min. 35 sec.
53.	110	7 "
54.	114	9 min. 20 sec.
55.	110	3 " 30 "
56.	110	4 " 30 "
57.	110	2 " 30 "
58.	124	3 " 20 "
60.	120	2 " 50 "
61.	104	4 "
63.	112	2 "
64.	120	3 min. 30 sec.
65.	122	2 " 15 "
66.	124	4 "
67.	106	3 min. 30 sec.
68.	114	1 " 45 "
70.	124	2 " 30 "
72.	110	6+ min.
73.	110	9 min.
74.	116	5 "
76.	116	3 "
77.	90	6 "
78.	114	2 min. 30 sec.
80.	122	3 " 30 "
81.	114	3 " 30 "
82.	100	2 " 50 "
83.	110	5 "
84.	112	3 "
85.	122	9 "
86.	112	2 min. 35 sec.
87.	124	3 " 15 "
88.	110	1 " 20 "

SERIES II.

CASES OF BLOOD PRESSURE BETWEEN 125 AND 135, TOGETHER WITH REFLEX VASOCONSTRICTION VALUATION OBSERVED AT THE SAME TIME.

Case	Blood Pressure	Reflex Vaso-constrictive Value
2.	128	6 min. 36 sec.
4.	128	5 " 15 "
22.	130	6+ min.
28.	130	5 min.
33.	128	4 min. 35 sec.
50.	126	5 "
62.	128	4 min. 30 sec.
69.	128	4+ min.
71.	128	5 min.
75.	130	6+ min.
79.	130	5+ "
101.	130	6+ "
108.	134	9 min.
116.	130	5 "

SERIES III.

CASES OF BLOOD PRESSURE ABOVE 135, TOGETHER WITH REFLEX VASOCONSTRICTION VALUATION OBSERVED AT THE SAME TIME.

Case	Blood Pressure	Reflex Vaso-constrictive Value
94.	140	6 min.
95.	138	9 "
96.	138	6+ min.
97.	140	6 min. 15 sec.
98.	140	5 " 30 "
105.	136	6 " 30 "
111.	140	7 "
112.	140	6+ min.
113.	138	7+ "
117.	140	4+ "
118.	140	4+ "
120.	140	10 min.
121.	140	9+ min.
123.	160	10+ "
125.	170	10+ "
109.	152	5 min. 35 sec.
110.	154	6+ min.
104.	180	9+ min.
115.	170	10+ "
109.	148	5 min. 30 sec.
100.	160	10+ min.
102.	160	10+ "
104.	160	8+ "
106.	150	6 min.

An analysis of this series of cases discloses the fact that we can make two correlations based on the observations recorded. These correlations are: 1. Low reflex vasoconstriction valuation is accompanied by or correlated with low blood pressure. 2. High blood pressure is accompanied by or correlated with high reflex vasoconstriction valuation.

These correlations are highly suggestive when we recall that German clinicians correlate hypertonicity with hyperplasia of the chromaffin tissue (which secretes adrenin), and that Addison's disease, caused by hypo-function of the adrenals, is associated with low blood pressure. The question at once arises is there any relation between reflex vasoconstriction and the adrenin content in the blood? Experiment and reasoning lead me to believe that the relation between them may be expressed briefly thus: *reflex vasoconstriction—anicemic dermatography—measures the adrenin content in the blood stream.* The basis for this correlation will be the subject-matter of a future paper.

REPORT OF A DIETARY STUDY OF ST. PAUL'S SCHOOL, CONCORD, NEW HAMPSHIRE.*

By FRANK C. GEPIHART, PH.D., NEW YORK.

The Russell Sage Institute of Pathology in Affiliation with the Second Medical Division of Bellevue Hospital, New York City.

At the request of the Rev. Samuel S. Drury, rector of St. Paul's School, at Concord, New Hampshire, Mrs. Gephart and I made a visit to this institution during the latter part of October, 1915. The purpose of this visit was to make a study and investigation of the food supply of the institution. We were given a free hand to conduct the investigation in any manner we saw fit.

The school is located approximately one and a half miles west of the city of Concord, and has an attendance of about 350 boys. The usual entrance age is fourteen years; that of graduation, eighteen years. The school, as a whole, is made up of three distinct parts, the Lower School, the "School" and the Upper School. Each boy entering the Lower School passes to his graduation successively through the Lower, the School, and the Upper School.

Upon our arrival, and after making a superficial inspection of the institution, we decided that, in order to make a thorough, valuable investigation it would be necessary to conduct three different types of survey, namely, a sanitary survey, a food value survey, and what we term a "general" survey.

The sanitary survey comprised a rigid inspection of everything regarding the sanitation of the institution, especially in regard to the food supply, and included an inspection of the food supply storeroom, the dairy, the kitchens and dining halls, the infirmary, the water supply, etc.

The general survey included a close study of the daily menus, with a view to correcting any irregularities in this connection, as well as to correct faults in individual dishes, to adjust such matters as too much salt, too little sugar, etc., and, lastly, to improve the palatability of the food in cases where this could be done. We conversed freely with the boys themselves regarding the food, and gave weight to their own likes and dislikes.

The results of the two described surveys are of local interest only, and, inasmuch as we found very few recommendations to make that could improve the sanitation, we wish to report here only the results and the methods of the food value survey.

As stated above, the institution is made up of three school groups and an infirmary. As a result of this we found four separate dining halls,

each of which we decided should be investigated individually. How could this be done to yield the most reliable results? The four dining halls were in daily operations, meals being served three times a day to approximately 350 boys and quite a number of attendants. Obviously, the first thought was actually to weigh and analyze the food consumed at each meal by each person. Without a staff of assistants and chemists, this plan was out of the question and, at best, could not be extended over a period of time. A much more reliable procedure would be to obtain an account of the supplies consumed at each dining hall for a given length of time, and balance against this the waste from each kitchen for the same length of time. This was the plan followed. The detailed information necessary for a successful completion of the work was arrived at in the following manner:

We found that the accounting department could supply us with detailed accounts of the weights of individual items supplied for the entire school session of 1914-1915 at each individual kitchen. With proper deductions for inventories, which were regularly made, we obtained in detail an account of all foodstuffs consumed at each dining hall. All that remained then to determine the gross supplies in energy was the chemical analysis of the individual items. An inspection of the various supplies on hand afforded us information concerning the nature of the individual items. With this information we were able to obtain analyses from such reliable sources as Atwater and Bryant, Sherman, Leach, König and others. However, in the case of numerous articles it was necessary to make chemical analyses. With the detailed information of pounds consumed and percentage composition of articles as supplied, we calculated the gross intake in pounds of protein, fat and carbohydrate for each dining hall. This gross account alone was not sufficient. We also had to learn what was actually consumed; in other words, we were obliged to follow the same course in determining the loss of energy in the various forms of waste, and when determined, this loss of energy had to be balanced against the gross intake. We found that the waste from the kitchens was made up of the following items: Waste bread,—supplied gratuitously to an orphanage situated a short distance from the school; scrap waste, bone scrap and spent fry grease, sold to the soap man; and lastly, garbage, which was sent to the piggery. We found that the accounting department could supply us with records in pounds of the various kinds of waste sold to the soap man. Samples of these items were taken and chemical analyses were made. In order to make account for the waste bread and garbage, the following plan was formulated: We weighed the waste bread in each kitchen and secured an account of the total number of meals that had been served

*The results here shown represent the average food value of meals served at this institution and is not a separate study of meals served to students alone, as may be seen from Table 20.

TABLE 7.
WASTE FOR SCHOOL YEAR FROM GARBAGE, WASTE BREAD, SPENT FRY GREASE, SCRAP WASTE, AND BONE SCRAP WASTE.

	UPPER SCHOOL POUNDS			THE SCHOOL POUNDS			LOWER SCHOOL POUNDS		
	PROTEIN	FAT	CARBO.	PROTEIN	FAT	CARBO.	PROTEIN	FAT	CARBO.
Garbage	2965.2	2284.7	2138.8	2095.2	2095.2	1130.8	1059.5	913.2	1307.5
Bread	268.9	72.5	1545.7	298.5	80.5	1715.8	181.3	48.9	1402.3
Fry Grease .....	.....	2198.0	.....	.....	1562.0	.....	.....	935.0	.....
Scrap Waste	92.8	89.0	.....	2.2	2.1	.....	9.8	9.4	.....
Bone Scrap ...	593.6	612.9	.....	537.5	555.0	.....	312.9	323.1	.....
TOTALS	3920.5	5257.1	3684.5	2933.4	4294.8	2846.6	1562.5	2329.6	2709.8

in each dining hall during the time the bread was collected. The accounting department keeps an accurate account of the number of meals served in each dining hall during each school term (the account is even itemized in days), hence we could calculate the pounds of waste bread in each kitchen for the same interval of time as we had used for the gross supplies. An analysis of the waste bread completed the chain. We weighed the garbage in the same manner; samples of the well mixed material were taken, sterilized, transported to the laboratory and the analyses made. Calculations for the school term were made in the same manner as in the case of the waste bread. These various forms of waste are all that were apparent. It might be stated that, with few exceptions, the employees, etc., all live at the institution. With all of this information, we are able to present the following tables, showing in detail the items consumed, and the resulting waste for each individual dining hall.

EXPLANATION OF TABLES.

Table 1* shows the percentage composition of the items in the supplies and the means of calculating and tabulating the same. In cases where the composition is omitted explanatory notes accompany the table.

Tables 2, 3, 4, 5 and 6 show the analyses and other detailed information concerning the various forms of waste.

TABLE 8.

BALANCES FOR SCHOOL YEAR 1914-1915.

UPPER SCHOOL.	LBS. PROTEIN			LBS. FAT	LBS. CARBO.
Supplies for year ..	18141.4	23214.4	52147.1		
Waste for year	3920.5	5257.1	3684.5		
BALANCE	14220.9	17957.3	48462.6		
THE SCHOOL.					
Supplies for year ..	16400.6	20184.7	49054.4		
Waste for year	2933.4	4294.8	2846.6		
BALANCE	13467.2	15889.9	46207.8		
LOWER SCHOOL.					
Supplies for year ..	10617.9	12906.6	31981.8		
Waste for year	1562.5	2329.6	2709.8		
BALANCE	9055.4	10577.0	29272.0		

* Tables 1, 2, 3, 4, 5, 6 and 15 will appear in reprints.

Table 7 shows a summary of the various forms of waste.

Table 8 shows the net balances in pounds of protein, fat and carbohydrate.

Table 9 shows the calculated average values per meal in pounds, of protein, fat and carbohydrate.

TABLE 9.

AVERAGE VALUE PER MEAL FOR SCHOOL YEAR.

UPPER SCHOOL.		Lbs. per meal.
Meals served	132,613	
Lbs. Protein	14220.9	
Lbs. Fat	17957.3	
Lbs. Carbohydrate	48462.6	0.3654
THE SCHOOL.		
Meals served	119,308	
Lbs. Protein	13467.2	
Lbs. Fat	15889.9	
Lbs. Carbohydrate	46207.8	0.3873
LOWER SCHOOL.		
Meals served	80,776	
Lbs. Protein	9055.4	
Lbs. Fat	10577.0	
Lbs. Carbohydrate	29272.0	0.3624

Table 10 shows a recapitulation of the preceding tables with additional calculations in the metric system, showing the distribution of heat in the various dietary constituents, as well as the cost of the food alone and together with service.

TABLE 10.

RECAPITULATION.

PER MEAL.	UPPER SCHOOL.	THE SCHOOL.	LOWER SCHOOL.
Lbs. Protein	0.1072	0.1129	0.1121
Lbs. Fat	0.1354	0.1332	0.1369
Lbs. Carbohydrate ..	0.3654	0.3873	0.3624
Grams Protein	48.6	51.2	50.8
Grams Fat	61.4	60.4	59.4
Grams Carbohydrate.	165.7	175.7	164.5
Calories Protein	199	210	208
Calories Fat	571	562	552
Calories Carbohydrate	680	721	674
Total Calories	1450	1493	1434
Per Cent. Calories from Protein	13.7	14.1	14.5
Cost (Food alone) ..	\$0.2004	0.2056	0.1919
Cost 1000 calories ..	0.1382	0.1377	0.1338
(Food alone)			
Cost Food plus Service	0.2316	0.2391	0.2245
Cost 1000 Calories	0.1597	0.1602	0.1566
(Food plus Service)			

Table 11 shows balances for the infirmary. The waste in the infirmary was calculated from a mean of the other three dining halls.

TABLE 11.

INFIRMARY.

	LBS. PROTEIN	LBS. FAT	LBS. CARBO.
Supplies for year	1817.0	2045.5	4575.3
Calculated Waste	338.5	431.6	317.5
BALANCE	1478.5	1613.9	4257.8

Table 12 shows a recapitulation of the infirmary data in a similar manner as in Table 10.

TABLE 12.

INFIRMARY—RECAPITULATION.

PER MEAL	MEALS SERVED 12,268
Lbs. Protein	0.1205
Lbs. Fat	0.1316
Lbs. Carbohydrate	0.3470
Grams Protein	54.6
Grams Fat	59.6
Grams Carbohydrate	157.4
Calories Protein	224
Calories Fat	554
Calories Carbohydrate	645
Total Calories	1423
Per Cent. Calories from Protein ..	15.7
Cost of Food Alone	\$0.2613
Cost of 1000 Calories (Food alone) ..	0.1836
Cost of Food plus Service	0.3290
Cost of 1000 Calories (Food plus service)	0.2312

Table 13 shows the percentage of the total food value of the diet supplied by the more important items. A word of explanation is here necessary. The information desired is the percentage of the calories of the dietary furnished by the various items in the dietary. In order to simplify the calculation, the following plan was used. The number of pounds of fat in the dietary was multiplied by the factor 2.27. If a unit of fat yields 9.3 calories, and a unit of protein or carbohy-

drates yields 4.1 calories, then a unit of fat yields 2.27 times that of either protein or carbohydrate (9.3). This reduces the fat to the same

basis as the protein and carbohydrate, hence when the three are added together the resulting sum is what has been termed "iso-dynamic pounds." It should be understood that while iso-dynamic pounds of protein and carbohydrate weigh a pound apiece, an iso-dynamic pound of fat weighs only 0.440 pounds. By treating each item in the same manner and dividing this result by that of the supplies, and multiplying by 100, the result yields the percentage of the food value furnished by the individual items.

Table 14 shows the animal protein in the diet and requires no explanation except to state that the data were obtained by adding together the pounds of protein which were furnished by the various items composed of animal protein, including those of milk and milk products.

TABLE 14.

TABLE SHOWING THE ANIMAL PROTEIN IN THE FOOD.

	LBS. PROTEIN IN SUPPLIES	LBS. ANIMAL PROTEIN IN SUPPLIES	PER CENT. ANI- MAL PROTEIN
Upper School	18411.4	12983.4	71.6
The School	16400.6	11619.2	70.8
Lower School	10617.9	7692.6	72.4
Infirmary	1817.0	1397.2	76.9

In addition to the dining halls, as above stated, another source of food was found in the "Tuck Shop." This is a small store located on the campus and under the control of the school. At the "Tuck Shop" the boys satisfy their desire for sweets, etc., as can readily be seen from a perusal of the table, showing the supplies sold there. The food value of the supplies sold at the "Tuck Shop" was arrived at in a similar

TABLE 13.

TABLE SHOWING THE PER CENT. OF THE TOTAL FOOD VALUE OF THE FOOD SUPPLIED BY THE LARGER ITEMS.

ARTICLES	UPPER SCHOOL		THE SCHOOL		LOWER SCHOOL		INFIRMARY	
	ISO-DYNAMIC POUNDS	%	ISO-DYNAMIC POUNDS	%	ISO-DYNAMIC POUNDS	%	ISO-DYNAMIC POUNDS	%
Total Supplies	122985.2		111274.3		71897.7		11035.6	
Bacon	1638.0	1.3	2002.2	1.8	906.3	1.3	38.9	0.4
Beef Loins	8641.2	7.0	7476.9	6.7	4637.7	6.4	1164.9	10.6
Bread and Flour	16467.2	13.4	14795.3	13.3	8781.9	12.2	1432.6	13.0
Butter	15291.0	12.4	12453.6	11.2	8493.2	11.8	913.6	8.3
Cream	1028.7	0.8	1418.3	1.3	541.5	0.8	328.3	3.0
Eggs	2630.3	2.1	2592.3	2.3	1679.2	2.3	346.4	3.1
Fowl	2185.0	1.8	2122.6	1.9	1468.7	2.0	216.3	2.0
Lamb	6347.4	5.2	5853.2	5.3	4278.5	6.0	893.1	8.1
Milk	17826.7	14.5	14052.5	12.6	9091.5	12.6	1332.3	12.1
Pork Loins	1735.9	1.4	1264.5	1.4	704.9	1.1	201.0	1.8
Potatoes	6262.6	5.1	6418.3	5.8	4265.4	5.9	321.1	2.9
Sugar	14377.0	11.7	13180.0	11.9	8548.0	11.9	1381.0	12.5
Remaining Items		23.3		24.5		25.7		22.2
No. of Items in Dietary		181		193		172		158

TABLE 16.
"TUCK SHOP."

PER YEAR	LBS. PROTEIN	LBS. FAT	LBS. CARBO.
Supplies	1540.1	2539.7	13803.8
Lbs. per boy	4.34	7.15	38.88
Total Cost of Food	\$6394.79		
No. of Days	171		
Average Number of Boys per Day ..	355		
Lbs. per Boy per Day	0.0254	0.0418	0.2273
Grams per Boy per Day	11.5	19.0	103.2
Calories per Boy per Day	47	177	423
Total Calories per Boy per Day	647		
Per Cent. from Protein	7.36		
Cost per Boy per Day	\$0.1053		
Cost of 1000 Calories	\$0.1627		

fashion as in the dining halls, and is shown in detail in Table 15, which follows, and which requires no explanation.

Table 16 shows a summary of the "Tuck Shop" supplies and several interesting calculations regarding them.

Table 17 shows calculations for the "Tuck Shop" arrived at in a similar manner as Table 13 for the dining halls, and shows the more popular items consumed.

TABLE 17.
"TUCK SHOP."

TABLE SHOWING THE PER CENT. OF THE TOTAL FOOD VALUE OF THE FOOD SUPPLIED BY THE LARGER ITEMS.

ARTICLES	ISO-DYNAMIC POUNDS	PER CENT.
Total Supplies	21109.0	
Coffee Buns	1916.8	9.1
Chocolate	3666.6	17.4
Cup Cakes	785.1	3.7
Ice Cream	867.3	4.1
Peppermints	1082.0	5.1
Sugar	2390.0	11.3
Remaining Items		49.3

No. of Items in Dietary..... 83

Table 18 shows the mean data regarding age, height and body weight of the boys in the different schools.

TABLE 18.

MEAN DATA OF AGE, HEIGHT AND BODY WEIGHT.

	AGE	HEIGHT	WEIGHT
Upper School	16 yrs. 1 mo.	5 ft. 8 in.	133.6 lbs. 172.7 cm.
The School	14 yrs. 7 mo.	5 ft. 5 in.	111.9 lbs. 165.1 cm.
Lower School	13 yrs. 6 mo.	5 ft. 2 in.	96.1 lbs. 157.5 cm.

Table 19 shows the calculated basal requirements of boys of these ages, weights and heights, as determined by Du Bois in the calorimeter at Bellevue Hospital, New York City. The basal requirement of energy is the quantity liberated by an individual at rest and before the morning breakfast. In addition to this there is shown a comparison of their basal requirements with what they actually receive.

TABLE 19.

TABLE SHOWING BASAL REQUIREMENTS

	SQ. METERS OF BODY SURFACE	B.A.S.A.L. CALS. PER HOUR PER SQ. METR.	C.A.L.S. PER 24 HRS. CALS.	C.A.L.S. PER 24 HRS. IN FOOD	PER CENT. OF BASAL REQ.
Upper School	1.73	44	1826	4997	274
The School	1.54	47	1737	5126	295
Lower School	1.40	49	1647	4949	300

Table 20 shows the distribution of the meals in the various dining halls to boys, masters, help, guests and nurses.

TABLE 20.

TABLE SHOWING THE PERCENTAGE DISTRIBUTION OF MEALS IN THE VARIOUS DINING ROOMS.

	BOYS	MASTERS	GUESTS	HELP
Upper School	74.4	7.8	1.6	16.2
The School	61.2	11.5	0.3	27.0
Lower School	67.5	10.3	1.0	21.2
Infirmary	51.4	23.9*	—	24.7

* Nurses.

DISCUSSION OF RESULTS.

By a study of Table 10 it is noticed that the food value per meal in the Upper School was 1450 calories; in the "School," 1493 calories; in the Lower School, 1434 calories; and from Table 12 the total calories per meal in the infirmary is found to be 1423 calories. The slightly higher value in the "School" might be due to the fact that the boys of this age were in the period of adolescence. The calculated caloric value of the food for twenty-four hours, as shown in Table 19, was approximately 5000 calories, which was about three times that of the basal requirement. This was a greater amount than that calculated for farmers or soldiers by Atwater, who allowed 3500 calories; and for blacksmiths or men engaged in hard work, for whom 4150 calories were calculated. The figures appear to be high, but inasmuch as we have no previous results for like conditions, we can only say that they are a revelation. It must be remembered that the values here presented represent the food consumed by an

assemblage of boys and adults, the distribution of meals in the three schools being about 70% to boys and the remainder to masters, guests and help. It must also be remembered that the boys have a regular allotment of time for exercise, when they indulge in such sports as football, rowing, track, hockey, baseball, tennis and golf. During 1915, for instance, 126 boys took part in rowing, making 36 visits to Long Pond. During the season 1914-15 there were 50 days during which time 284 boys played hockey. During the season 1914-15 there were 40 days during which time 242 boys played football. During this season 68 boys did track work during approximately 25 days, and 108 played baseball during the same length of time. No data were available for tennis and golf, but ample provision was made for indulgence in these sports. As above stated, no studies under like conditions have been made.

Studies have been made in orphan asylums in Baltimore by Knight, Pratt and Langworthy, and in Philadelphia by Smedley and Millner. (From Bulletin 223, Office of Experiment Stations, U. S. Department of Agriculture.)

Jaffa (Bulletin 132, Office Experiment Station, U. S. Department of Agriculture) studied the dietaries of fruitarians. One boy of ten years was included in the study.

In these cases the ages were lower, and no doubt they were living under different conditions. The results recorded in these studies were from 1700-1800 calories per day. Of the foreign studies might be quoted first that of Voit, in 1877 (*Untersuchung der Kost*, p. 125) of an orphan asylum in Munich, the ages ranging from six to fifteen years, with an average of 1680 calories.

One might also quote the extensive study of Schröder, who investigated the Children's Home for boys at Rostock, and found the average calorie intake to be 2900 calories (*Arch. für Hyg.*, 1886, iv, 42). This investigation was conducted in 1886 upon 38 boys, ranging in age from 8 to 15 years. Schröder found in this institution that the food consisted largely of carbohydrate (*Schwarzbrod*) in greater quantities than Voit would admit to the diet of a working man while performing severe work. As might be expected, there was a deficiency in animal protein, meat being served only twice a week. The boys were required to perform the various forms of labor about the farm, and the consumption of food shows quite a contrast with

other quoted studies where the life was more or less sedentary.

Another excellent study is that of Camerer (*Zeit. f. Biol.*, 1892, xxix, 399). Camerer conducted a very elaborate study of the consumption of food by his own children, five in all, four girls and a boy. This single instance is the only case in which the age compares favorably with that of the boys at St. Paul's. In addition to the consumption of food he presents complete studies of the urine, feces, perspiration, height, weight, etc. The study concerning the boy was conducted over a period of five years. The actual observations were made on twenty-four days of each year divided into four periods of six days' duration, the periods being evenly distributed throughout the year, with an omission of the second and fourth year of the study. The food was actually weighed and analyzed and the urine collected in twenty-four hour periods and closely studied. The table presented below shows the summary of the food chart, the mean, minimum and maximum grams of protein, fat and carbohydrate in the daily food being shown.

A calculation of the mean values of the table gives the following summary:

AGE	CALORIES PER DAY
13-14	1818
15½-16½	2455
17½-18½	2560

No data are presented concerning the activity of the boy, except that he attended school, lived at home and entered the medical staff of the military service immediately after the completion of this study.

A study of the tables shows a well balanced dietary, with 14% of the total fuel value from protein, 70% of which came from animal sources. The cost of the food per thousand calories was approximately 14 cents, that of the food, plus service, about 16 cents. The cost of the food supplied per meal was about 20 cents. Considering the exceptional quality of the food supplies, which we found to be of the highest, this certainly speaks well for the purchasing department. In addition to the regular quantitative analyses, a number of examinations for adulterations were made on articles most likely to be adulterated, with negative results in all cases. It may be stated that an expert buyer made regular trips to Boston, where he purchased on the open market. A study of Table

DATE	AGE	PROTEIN			FAT			CARBO.			ALCOHOL
		MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	MEAN	MIN.	MAX.	
Dec. 1886 to Dec. 1887	13-14	95.9	65.4	138.6	40.5	21.3	69.0	246.7	157.4	379.7	5.2
Jan. 1889 to Jan. 1890	15½-16½	102.5	75.2	134.2	72.7	35.7	133.2	286.9	150.5	405.1	26.0
Jan. 1891 to Meh. 1892	17½-18½	100.0	79.6	122.7	83.5	43.4	100.4	302.1	221.4	393.1	19.2

13 shows that 12 items out of approximately 175 in the dietary furnished almost 76% of the total food value (exact figures are shown in the table). The order of nutritional magnitude of these articles is, in a general way, milk, bread and flour, butter, sugar. This is very interesting and shows that the real staff of life is the common foods. It might also be stated that the place held by milk in the dietary is to be commended. A word concerning the milk is not out of place. All milk served at the institution was obtained on the school farm, under most modern sanitary conditions, and showed a very low bacterial count. In addition to this, the milk obtained in the morning was immediately chilled and served at breakfast; that collected at night, served at supper, in this way precluding chances of contamination and bacterial growth.

Approximately 175 different articles were served per year, and a close inspection of these articles shows a great variety, with large quantities of vegetables, etc., which, without doubt, are valuable not only for their food value, but also for their mineral content. This might also be said of the milk.

It will be noticed in Table 16 that the calculated caloric value of food per boy per day at the "Tuck Shop" was 647 calories, at a cost of 16 cents per thousand calories, which was approximately the same as the cost of a thousand calories for food and service at the three schools and infirmary. By inspection of Table 17, it is seen that 17% of the food value of the food in the "Tuck Shop" was derived from chocolate, approximately the same per cent. from sugar, and 9% from coffee buns; or, in other words, out of a total of 83 articles in the supplies, 6 articles furnished approximately 50% of the food value. These articles, in the order of their nutritional magnitude, are, chocolate, sugar, coffee buns, etc.

GENERAL CONCLUSIONS.

The sanitation was found to be good, with a few minor exceptions; the quality of the food supplied, exceptionally good; the quantity supplied, above our expectations; and the cost, considering the quality, low. The manner in which the food was served was found to be first class. The diet for the term was ideal, but in detail required adjustment. The facilities for treating occasional injuries and sickness were perfect. The general healthfulness of the community was good, with most ample provision for the indulgence in a variety of sports.

A series of menus was made out, based upon the recommendations of our findings. These were put into effect at the school, with the following results, quoted from a recent letter of Dr. Drury: "You will be interested to know that we have been using your menus for the entire month of May. Not a boy has expressed anything but vast satisfaction at the variety and arrangement of foods."

Clinical Department.

ADENOMYOMA OF THE RECTO-VAGINAL SEPTUM.

By FOSTER S. KELLOGG, M.D., BOSTON.

IN August, 1916, Cullen summarized the reported cases of adenomyoma of the recto-vaginal septum.¹ The cases all date from 1909 or 1910. In the same article, he reports in detail two additional cases of his own. He classifies the types of this pathological condition as follows:

"1. Small adenomyomas lying relatively free in the recto-vaginal septum.

"2. Adenomyomas adherent to the posterior surface of the cervix and at the same time to the anterior surface of the rectum.

"3. Adenomyomas gluing the cervix and rectum together and spreading out into one or both broad ligaments.

"4. Adenomyomas involving the posterior surface of the cervix, the rectum and broad ligaments and forming a dense pelvic mass which cannot be liberated."

He adds: "Of course, one type merges imperceptibly into another and a case which today belongs to Group 1 may in a few years belong to Group 2 or 3."

There are fifteen reported cases of adenomyoma of the recto-vaginal septum in the literature according to this authority; and they fall into the following groups:

Group I. Cullen's Case 1, Stevens' Case 1 and 5, Nadel's Case.

Group II. Lochyer's Case 2, Cullen's Case 3, Stevens' Cases 2, 3 and 4 and 6, Jessup's Cases 1 and 2.

Group III. Cullen's Case 4, Cullen and Richardson's Case 5.

Group IV. Cullen's Case 2.

I wish to report in detail a case of adenomyoma of the recto-vaginal septum, operated in August, 1916. I wish to take it up especially from the standpoint of clinical diagnosis, because at the time of seeing the case, I was ignorant of the subject, and because prior to operation, from the nature of the case, pathological examination was of no value for diagnosis; and because, as Cullen points out, it is very easy to mistake the condition in ignorance for an inoperable carcinoma and so permit a case in group 1, 2 or 3 to become hopeless in group 4. I shall, therefore, present the case to you clinically as it came to me. In passing, it may be said that if we keep the above grouping, which while arbitrary in that it represents different stages of a single process, is valuable at this early stage in the study of the subject, in that it indexes important cases; that my case represents a fifth group or rather a new group which

should be placed either between 2 and 3 or 3 and 4, because it represented a stage different from any reported, in that the tumor caused pressure necrosis, resulting in ulceration in a few spots through the posterior vaginal wall with rather free bleeding, as may be distinctly seen even in the shrunken pickled specimen which I will show you.

The problem presented itself as follows: July 26, 1916, I saw in consultation with Dr. Thomas E. Cunningham, Jr., of Cambridge, Mass., a woman 40 years old, giving the following history:

Irish-American; married 13 years. Separated from husband two years. Negative medical history; no clinical history of gonorrhea, except burning and frequency when first married. Never has had any discharge. No clinical history of syphilis. Catamenia: her periods began at 15, were of 28-day type, always regular, very little pain, flowed $1\frac{1}{2}$ to 2 days. Has never been pregnant.

Present history negative except for flowing. Her May period was normal, her June period was normal, stopped in two days, but five days later she began to flow and flowed until July 1, stopped from July 1 to 5, began again July 6 and flowed until today, July 26. States she is flowing today. The amount is said to have been considerable. She has been in the country on the advice of another physician, and off her feet much of the time.

Physical Examination. Color good; pulse, 80, of good quality; rather drawn expression. Dr. Cunningham states physical examination negative save for vaginal. Abdomen soft, not distended. Vaginal: free flow of blood, with some clots in vagina. Nulliparous perineum, no external or urethral evidence of past or present gonorrheal infection; the cervix is smooth, the uterus is retroverted so that the body is not palpable with the outside hand; posterior to the cervix is a mass taken to be the fundus. This mass is not replaceable if it is fundus; but, on the other hand, it gives the finger a sensation of not being wholly fixed. Examination with the finger in rectum tends only to confirm this. Nothing further is made out. In the posterior vaginal wall behind the cervix and extending out laterally, the vaginal mucous membrane feels thickened and rugous, but not ulcerated or indurated. On inspection, this proves to look as it feels, except that it is oozing blood, and on rubbing bleeds freely. Blood, as well, is coming from the cervix, which, on inspection, is smooth and clean.

These findings were puzzling in the extreme; primary carcinoma of the vagina is very rare, and besides the appearance was not that of carcinoma in its bleeding stage. To presuppose a 3d degree retroverted uterus with fundal carcinoma ulcerating through the posterior wall of the vagina, which was considered, demanded at least a fixed uterus which I have pointed out examination did not quite give. So did a cervical carcinoma with vaginal secondary. Old pelvic inflammation with any of these considerations as they came to mind, not in detail, because they will occur to anyone, but simply

to emphasize that the picture was an irregular one which suggested that carcinoma of the genital canal was not the answer.

We determined to get snippings of the tissue behind the cervix for pathological diagnosis. Accordingly the next day this was done, nothing developing except that the tissue here was very difficult of access and that free bleeding accompanied the removal of bits. Blood for a Wassermann was taken at the same time. Submitted to F. L. Burnett, M.D., for pathological examination, he reported July 27-28, 1916:

Observation: With an acetone insoluble, as well as with a cholesterinized antigen, the corpuscles are completely hemolyzed. Opinion: The serum gives a definitely negative Wassermann reaction. Same date, the snippings "chronic inflammatory."

Bleeding continuing and having made no progress in diagnosis, the patient was sent to hospital and ether examination, curettage of cervix and uterus and several snippings from all over the surface of the roughened posterior vaginal wall made. Ether examination revealed nothing new except that the uterus and vaults were movable, but that the uterus was not replaceable. Rectal high up revealed the mass mentioned before and taken for part of the fundus. Pathological opinion on the curettings and snippings follows:

The curettings do not express an abnormal condition, while the tissue from the vagina shows merely an increase in the fibrous elements of the submucosa.

We now knew as far as we could pathologically that the patient did not have carcinoma; but it is only honest to say that in view of the persistent bleeding from the posterior cul-de-sac we were not entirely prepared to accept the pathological diagnosis as correct, suspecting that our snippings had overlooked the true lesion. Bleeding continuing from both the uterus and the posterior cul-de-sac, one week later it was determined to remove the upper vagina.

In the mean while, search through the literature had brought to light Cullen's article above mentioned and with that in hand the diagnosis was made for us.

It was determined to approach the matter wholly through the abdomen, though I had previously considered cutting a vaginal margin from below. Under gas-oxygen-ether, knowing what to look for, the diagnosis was so clear that one marvelled to have missed it before. The retroverted small uterus sat on a tumor the size of a small egg, perfectly clearly defined from it. The vagina was thoroughly scrubbed with soap and water and alcohol, the abdomen opened and the mass encroaching on the rectum readily felt. A good exposure was obtained and a hysterectomy begun, leaving the ovaries, taking the tubes. The matter was simple until the

tumor was approached; it was found to be an integral part of the cervix, the vagina and the rectum. It was determined to dissect it from the rectum and remove it with the uterus and vaginal cuff. The tumor apparently penetrated all coats of the rectum except the mucous membrane, and it was soon apparent that it would be impossible to dissect it free without opening the rectum; in addition, the rectum was accorcioned onto the tumor, so that perhaps four or five inches was in apposition with the one to one and a half inch tumor. In this way a very small nick, as the rectum was freed up, became a long rent. Resections of the rectum seemed inadvisable, and it was doubtful if there was enough below the tumor to sew to. Much time was wasted endeavoring to dissect it off; it was opened and repaired in three places. It is clear to me now that frank excision of a longitudinal segment of rectum should have been the procedure with clean repair, narrowing the lumen. The uterus and a vaginal cut three-quarters of an inch below the necrosed vagina were removed with the aid of Wertheim right-angle clamps, a vaginal drain inserted, the repaired rectum put back below the peritoneal flaps and these closed. Abdomen closed in layers without drainage.

The patient came off the table in shock, which persisted in considerable degree for 48 hours; she gradually improved. The vaginal drain came out of itself in 72 hours. The bowels were kept tied up for 7 days, then moved with oil above and below. The wound broke down above the fascia in the middle half on removal of the stitches. On the 8th day a recto-vaginal fistula developed, but the patient continued to pass gas and feces through the anus. There were no urinary symptoms, very little temperature, very slight distention, easily controlled by pituitrin. Patient left the hospital at the end of the fourth week in hospital, three weeks after operation. At the end of the 7th week the abdominal wound was healed and only gas came through fistula; patient up and about; at the end of the 8th week the fistula closed.

Follows the pathological report on the removed specimen:

Observation: The specimen consists of a small uterus in which there are a few small fibromata, and a portion of the vagina. In the posterior cul-de-sac the mucous membrane is somewhat roughened and reddened, and there is an indefinite firmness. In a section through the mass the tissue is a uniform pink color.

Microscopically, the tissue is composed of a thin layer of stratified epithelium, beneath which there is a mass of fibrous and smooth muscle cells. The mass is pierced here and there by glands having a regular basement membrane. The cells of the gland are generally columnar in type, in a single layer, and mitotic figures are not apparent in their nuclei. Lymphocytes are not numerous in the tissue.

Opinion: The tissue back of the posterior cul-

de-sac is infiltrated with an adeno-leiomyoma; it is not malignant.

CONCLUSIONS.

Cullen states that all patients were still menstruating; the age varied from 25 to 53.

That menstruation in excess is the most pronounced symptom; in this case the flowing was continuous.

That pain may or may not be a symptom, depending on whether pelvic nerves are gripped in the growth or pressure is exerted; there was no pain in this case.

That rectal pain, dependent on encroachment on rectum and pain on defecation may or may not be present; not present in this case.

ETIOLOGY.

That these tumors result from fetal rests of uterine mucosa or from remains of Müller's ducts.

Further information on this subject, together with bibliography and descriptive drawings is contained in Cullen's paper and the discussion that follows.

The one important fact emphasized by this case and the others is that the condition should always be in mind so that in the future these cases may not be regarded as inoperable malignant disease.

REFERENCE.

- ¹ Adenomyoma of the Recto-vaginal Septum. Thomas S. Cullen, M.D., Jour. A. M. A., Aug. 5, 1916.

Book Reviews.

Personal Health. By WILLIAM BRADY, M.D. Philadelphia and London: W. B. Saunders Co. 1916.

This volume, denominated in its sub-title "a doctor book for discriminating people," deals solely with personal hygiene and not with matters of sanitation and public health. It is divided into twenty-two chapters dealing with various body functions and giving in plain language practical directions to the laity for their intelligent observation and control.

In regard to some of the details of the book we cannot find ourselves in agreement with the author's preference of suspenders to belts, or his permission of a two-inch heel for women's shoes; but in the main his hygienic dogmata are sound, sensible and straightforwardly expressed. The subjects of ptosis and faulty posture might well be more elaborately considered. The book is without illustrations but has a useful appendix dealing with various domestic

remedies and procedures. On the whole, it should prove a useful and safe medical manual of hygiene to place in the hands of the public.

Latin for Pharmacists. By GEORGE HOWE, Ph.D., Professor of Latin, and JOHN GROVER BEARD, Ph.G., Assistant Professor of Pharmacy, University of North Carolina. Philadelphia: P. Blakiston's Sons & Co. 1916.

With the decline of classical education, it has become the exception, even for physicians, to have a sufficient knowledge of Latin to write prescriptions correctly. This excellent Latin grammar for pharmacists might, therefore, equally be commended to doctors who desire that their prescriptions should be accurately expressed and understood. Like all special scientific grammars it is incomplete; but it gives such paradigms and vocabularies as are commonly necessary in medicine, with sections on syntax and prescription writing which afford sufficiently extensive instructions for this purpose. To the best of our knowledge this book is unique and should find a place and use in the education of physicians and pharmacists unless the employment of Latin in prescription writing is to be entirely abandoned.

Vaccine Therapy in General Practice. By G. H. SHERMAN, M.D. Third Edition. Detroit, Mich.: 1916.

This volume, published by the author, is intended for physicians in general practice. This third edition aims to present the accumulated experience of the past few years, and has been entirely rewritten. The chapters on treatment have been rearranged anatomically so that diseases are grouped on a regional basis. In general it may be said that though temperate in statement, the author seems unduly optimistic in his estimate of the almost universal value of bacterial vaccines.

The Medical Record Visiting List, or Physicians' Diary for 1917. Newly revised. New York: WILLIAM WOOD & Co. 1916.

This new annual edition of the Medical Record Visiting List has been revised to increase the amount of matter intended to be useful in emergencies, and to eliminate such as might better be referred to in a physician's library. The most important change is in the list of remedies and their maximum doses in both the apothecaries' and the decimal system. As indicated in this edition, these are now official in the United States of America. This convenient visiting list should continue its established utility to physicians.

Physiological Chemistry. A Text-Book and Manual for Students. By ALBERT P. MATHEWS, Ph.D. Second Edition. New York: William Wood and Company. 1916.

The second edition of this very suggestive work presents few alterations, and those which appear merely enhance the exactitude of the text rather than developing new material or extensively re-treating the old.

The work should appeal strongly to all who desire a true graduate school text, a book which not only supplies knowledge, but unfailingly instigates thought and speculation in the fields covered. Such a volume demands all the preparation medical students now possess, and should be a valuable source of condensed information to the practitioner who desires to read into the newer achievements of physiological chemistry. Particularly commendable in this line is the long chapter on the physical chemistry of protoplasm which, with the seventy-three references that follow it, makes a most excellent introduction to matter which is entering medicine with phenomenal rapidity.

The long section on laboratory methods and practical work becomes of considerable general value through the addition of references in the description of all-important experiments, but methods demand re-editing with the greatest frequency, and this section must either fall out of date very rapidly or make unfair demands for new editions. This section also adds markedly to the bulk of the text, thus diminishing space which might be given to direct chemical considerations, and it seems fair to hope that eventually we shall have the laboratory methods as another small and inexpensive volume.

A very thorough index, together with excellent diagrams and illustrations, gives well rounded value to a markedly serviceable book.

Stedman's Medical Dictionary. By THOMAS LATHROP STEDMAN, A.M., M.D., Editor of the Medical Record. Fourth revised edition, illustrated. New York: WILLIAM WOOD & Co. 1916.

This fourth edition of a medical dictionary that has speedily established itself as a standard contains a large number of new words relating especially to Colloid Chemistry, to Heredity, Radioactivity, Dentistry, and recently discovered Tests and Reflexes. The terms of the B. N. A., are employed throughout and are everywhere indicated as such. It is to be regretted, as in previous editions that the Greek letters are not employed in the etymology of words. The volume is well illustrated and has a convenient appendix of tables. It is to be recommended as cordially as ever to physicians and students.

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MASSACHUSETTS INCOME TAX.

IN last week's issue of the JOURNAL we published an editorial by Mr. Joseph E. Perry, Massachusetts Income Tax attorney, calling the attention of physicians to those aspects of the new Massachusetts Income Tax Law which will particularly affect them. We have also received from the Department of the Tax Commissioner the following summary of the Massachusetts Income Tax, which it seems advisable also to publish in this place and emphatically to direct to the notice of physicians whom it especially concerns.

"The new law leaves unchanged such parts of our present tax system as the local assessment of real estate and tangible personal property; the taxation of corporations, inheritances, polls, and the various license and similar taxes. In the future, as in the past, shares of stock in Massachusetts corporations, deposits in Massachusetts savings banks, mortgages on real estate taxed in Massachusetts will be exempt from taxation, as will be also the income derived from such property.

The new law taxes the income from certain classes of property, the net income from earnings, and the net profits from the purchase and sale of securities. It exempts from further taxation the property from which such taxed income is derived.

It differs from the Federal Income Tax in that it taxes only income from certain sources and not from all sources, and it has only flat rates instead of progressive rates which increase with the size of the taxed income. It differs also in the details of its deductions and its administration, but in adopting the calendar year as the taxable period, and in the forms of returns required and in all other ways, it follows the Federal system so far as is possible so as to cause the minimum of additional inconvenience to the taxpayer.

The new law was designed to correct certain evils which have developed in the present system. The rate of taxation is uniform throughout the State, thereby removing the chief incentive, as far as evasion of taxes is concerned, for the wealthy people to colonize in a few towns with low tax rates. The new law is to be administered by the State in a centralized manner, insuring uniformity of assessment and collection, and removing the possibility of understandings between local assessors and wealthy residents, which have usually resulted in gross undervaluations and inequality of justice. The new rates compare favorably with those of surrounding states, and should check the alarming emigration of capital from the State. The new law substitutes just and reasonable taxation in place of previous confiscation. It puts a premium on honesty instead of on deceit. It provides for compulsory returns and backs up that provision by severe penalties and by obtaining information at the source. It abandons April first as the sole test of taxable citizenship and taxability. Instead, the tax is measured by the income received during the entire calendar year next preceding, and makes taxable every person who is an inhabitant of Massachusetts at any time during the first half of the year.

Perhaps most general interest is attached to the tax of one and one-half per cent. on the excess above two thousand dollars of the net income derived from professions, employments, trade and business. The law provides in detail the method by which such net income shall be computed and requires a return to be made by each person whose gross income exceeds two thousand dollars, even though by exemptions and deductions the net may be reduced below the taxable limit. For those with dependents, the exemption may be as high as three thousand dollars.

The same rate of tax is applied to income from annuities.

A tax of three per cent. is imposed on the profits from the sale of securities, with directions for determining the amount of the profit.

A tax of six per cent. is levied on the income from bonds, shares in corporations and partnerships, money at interest and other debts due the taxpayer, with exceptions which may be stated broadly by saying that no such income is taxable which is derived from sources which heretofore have been non-taxable, except in the case of partnerships having transferable shares. Under some conditions, a small exemption may be obtained as to income from annuities and as to income taxed at the six per cent. rate.

Partnerships, minors, estates of deceased persons and, in general, all persons or organizations except corporations receiving taxable income, are taxable, and all are entitled to the provisions relating to abatements and appeals.

Chief interest centers in the requirement that returns are compulsory and must be made within the first two months of the year, *i.e.* on or before March first. In cases of persons becoming inhabitants after March first, or by reason of absence, etc., being unable to make the return, other provisions apply.

Returns may be made at the State House or to the Income Tax Assessor or Deputies in the district where the inhabitant lives. The division into districts, the names and office addresses of the Assessors and Deputies, will be announced later. Blanks for the returns will be available on application to the Tax Commissioner or any of his Deputies, or from banking institutions throughout the State.

Returns as to real estate and tangible personal property should be made to the assessors of each city or town, as heretofore, and if a taxpayer fails to make such return, he will be obliged, in addition to his state tax, to pay locally not less than he paid last year.

Tax bills will be sent out, and the tax payable October 15, 1917. The proceeds will be distributed back to the various cities and towns, and the latter are guaranteed to suffer no loss of revenue.

The new tax is expected to reach nearly five billions of property which has heretofore escaped taxation, to produce more revenue, and to be administered at a cost of less than one per cent. of the revenue produced."

ENLARGEMENT OF THE ARMY MEDICAL CORPS.

As we have noted in a previous editorial, Congress has recently passed a law materially increasing the strength of the United States Army Medical Corps and there is now a considerable number of vacancies open to medical graduates and offering an immediate opportunity for an agreeable life position with liberal remuneration. Moreover, these young men are

needed by the country to provide an adequate corps of military sanitary experts. An examination for these positions is announced in January, and we are informed that another will be held in February in which all eligible physicians are invited to participate.

Eligibility consists in being under 32 years of age at time commissioned, physically sound, of good moral character, a graduate of a reputable medical school, with a year's hospital experience, and capable of passing a reasonable preliminary examination. Upon passing these tests the candidate is commissioned by the President of the United States a First Lieutenant in the Officers' Reserve Corps, and assigned to duty at the Army Medical School, during which his pay and allowances amount to somewhat more than \$200 a month. On graduation, if above the minimum passing mark, he receives a permanent commission.

The Surgeon General of the Army, Washington, D. C., has prepared a circular giving, in detail, the steps necessary to secure an appointment, which, we are informed, he will be glad to furnish to anyone desiring it. Local examining boards will be convened at the larger military posts and cities so as to meet the reasonable convenience of candidates and save expense.

To those who have given no thought to the matter, the first consideration naturally would be as to what such a career might promise to a man who had achieved the distinction of a diploma in medicine—for such today is a real distinction.

It certainly offers immediate permanent relief from all pecuniary anxieties, for the remuneration is adequate to meet reasonable requirements and provide a nest egg for the family. It also offers a life of contact with educated people, all of like circumstances and socially equal—in a way it is an ideal existence.

The field of service is world wide, thus giving the broadest kind of professional opportunities and experiences. Moreover, the authorities encourage professional development in every legitimate direction and, so far as practicable, supply the means of its accomplishment.

As for distinction in medicine, this largely depends upon the personal equation of the individual; but it is an interesting fact that, considering the entire profession, the proportionate number in the Medical Corps of the Army of those who have attained distinction is very high.

We can only add that to men of adventurous spirit, who would make the world their field of operation, and who seek the broadening touch of people and things of all nations; who would put to the test the chance of large responsibilities and the possibility of renown,—the Medical Corps of the Army offers a great adventure. Moreover, today, it offers an opportunity to serve the country at a moment when trained and tried medical officers are greatly needed.

INCREASED COST OF JOURNAL PRODUCTION.

IN extending a cordial greeting to its readers in this first issue of the New Year, the JOURNAL feels it a duty to call their attention to the increased cost of production which contemporary conditions have caused, and whose inconvenience must be felt by all. The chief item in this increasing cost is the great rise in price of paper, which during the coming year will cost over 100% more than in 1916. Despite this fact, however, and despite other elements of increased cost of production in engraving and printing, due to the rise of price of metals, the JOURNAL will maintain its present standard of quality in paper, typography and illustration, notwithstanding the financial hardship involved. The same number of free reprints will be supplied to contributors as in the past, and additional reprints will still be furnished at cost. This cost, however, must increase proportionately with the general increased expense of production. We regret exceedingly this necessity and sincerely hope that the prospect of the return of peace conditions, which at present seems more promising than at any time for the past two years, may lead to such an economic readjustment as will make the imposition of this burden on our contributors no longer imperative.

MEDICAL NOTES.

AMERICAN CONGRESS ON INTERNAL MEDICINE.—The first scientific session of the American Congress on Internal Medicine, an organization recently chartered under the laws of the state of New York, will be held in New York city on December 28 and 29, 1916, following the meeting of the American Association for the Advancement of Science. For this meeting the novel plan has been adopted of electing, by the

officers and council of the Congress, a referee and two co-referees for the decision of mooted questions that may arise during the Congress. On this occasion Dr. Sajous of Philadelphia will be the referee, and Drs. Daland and Dercum of the same city will be co-referees. The primary purpose of the Congress is to enlist the interest and foster the work of American physicians who are devoting themselves to research and clinical investigation in the province of internal medicine. The president of the Congress is Dr. Reynold Webb Wilcox of New York. Boston members of the council are Dr. Philip Coombs Knapp and Dr. Herman F. Vickery. The forenoon session of December 28 will be devoted to the presidential address and general business; the afternoon session of that day, to a symposium on the ductless glands in cardiovascular diseases and dementia precox. The morning of December 29 will be devoted to a meeting of the council of the American College of Physicians, the afternoon to a symposium on duodenal ulcer, with leading papers by Dr. John B. Deaver of Philadelphia and Drs. Max Einhorn, G. A. Friedman, and F. B. Turck of New York. In the evening will be held a convocation of the American College of Physicians. This program is provisional, but the plan of the meeting commands the interested attention of internists and general practitioners.

FOOT AND MOUTH DISEASE.—Considerable apprehension was created throughout the United States in the latter part of November by the discovery in Kansas City of a number of suspected cases of foot and mouth disease in a herd of cattle from Nebraska. Immediate quarantine precautions were taken, not only in Missouri but in Pennsylvania, Connecticut, Rhode Island and Massachusetts, to avert, if possible, the development of another epizootic of this disease similar to that which caused such a large economic loss last year. At Chicago an absolute quarantine was declared against all cattle shipments from Kansas, Nebraska and Missouri. As a matter of fact, however, it was soon discovered that the suspicious lesions were those of simple stomatitis and not of foot and mouth disease, so that on December 1, the established quarantines were everywhere raised, and the fear of an epizootic was at an end. The prompt establishment of precautions, however, was eminently desirable and affords gratifying evidence of the vigilance of officials to avoid future spread of the infection.

PREVALENCE OF DISEASE IN THE UNITED STATES.—The weekly report of the United States Public Health Service for December 8, 1916, states that during the month of October there were reported 67 cases of smallpox, and 393 of typhoid in Kansas. During the same period, there were 70 cases of typhoid in Washington and 40 of smallpox in North Dakota.

DEFECTIVE TEETH IN NEW YORK SCHOOL CHILDREN.—Out of 330,179 school children examined in the city of New York in 1914, 194,207, or 58.8%, suffered from defective teeth. This exceeded the sum total of all the other defects noted by nearly 80,000. Defective teeth impair general health, and impede school progress. Disorders of the digestive tract, tuberculosis and various other diseases frequently are preceded by diseased conditions in the mouth. There is a direct relationship between dental development and mental development, and it is absolutely essential to good work in schools, that children's teeth be maintained in a healthy condition.

LONDON DEATH RATES IN OCTOBER.—Statistics recently published show that the total death rate of London in October, 1916, was only twelve per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 16.8, in Finsbury, a crowded central slum, and the lowest was 6.7, in the precincts of the financial district.

DIVISION OF OCCUPATIONAL DISEASES.—At the last meeting of the Medical Board of the Union Hospital, Borough of the Bronx, a division of occupational diseases was established, and Dr. Frederic W. Loughran, of the staff, was designated as attending physician in charge.

HEREDITY OF CANCER. The annual meeting of the American Association of Life Insurance Presidents was held in New York City on December 15. Mr. Arthur Hunter, president of the Actuarial Society of America, presented a paper on heredity of cancer, based on a two years' study of original insurance statistics bearing on the eighty thousand annual deaths from this disease in the United States.

"There seems little to support the view that cancer is the result of contagion. Twenty thousand applications for insurance were reviewed and it was found that in 488 cases one only of the parents of the applicant was stated to have died from cancer and in four cases both parents were stated to have died of that disease. There were 122 times as many cases in which one parent had died of cancer as those in which both parents had died of that disease. There could hardly be a stronger test than the case of husband and wife.

"My first investigation consisted of cases of persons insured in six companies, both parents having died of cancer prior to date of application for insurance. Of 472 grandparents of the insured, the cause of death was given in 234 cases of which two were from cancer; the cause of death was stated in 184 of these as 'old age,' the average age at death of these was 82. In 72 of the grandparents the cause of death was not known but the age was given, the average being 62; in 155 cases neither the age nor the

cause of death was known. It is reasonable to conclude that if only two died of cancer out of 234 parents of persons who died of cancer, that disease is not hereditary.

"The possibility of heredity in cancer has generally been studied by experiments on animals. In the case of human beings there has been no previous attempt, so far as I am aware, to investigate the problem in families where there has evidently been a cancer strain, if such a thing exists. In the present investigation, one of the groups consisted of cases in which both of the parents had died from cancer; and in another of the groups, a parent, and a brother or a sister of the policyholder had died from that disease. It might be expected, therefore, that if cancer were hereditary, it would be shown very clearly in the family records of these persons, but this has not appeared.

"Men and women who are in anxiety of mind on account of the appearance of cancer in their ancestry or immediate family may dismiss such anxieties, as there is no statistical evidence at the present time that the disease of cancer is transmitted by inheritance in mankind."

EUROPEAN WAR FUNDS.

WAR RELIEF FUNDS.—On December 29, 1916, the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$212,523.02
French Wounded Fund ..	171,379.89
Armenian Fund	130,384.46
French Orphanage Fund ..	72,880.54
British Imperial Fund ..	71,769.36
Surgical Dressings Fund	59,372.17
Polish Fund	55,211.93
La Fayette Fund	21,494.03
French Musicians' Fund ..	976.00

BOSTON AND NEW ENGLAND.

FORSYTH INFIRMARY LECTURES.—It is announced that a series of free public lectures is to be given on Sunday afternoons at the Forsyth Dental Infirmary, Boston. The first of these was given on December 10 by Dr. Richard Grady, U. S. N., dental surgeon at the Annapolis Naval Academy, on "Opening the Doors of Dental Knowledge to the People." Other speakers in the series will be Dr. Harvey W. Wiley, of Washington, D. C., Dr. Edward C. Kirk of Philadelphia, Dr. Truman Brophy of Chicago and Dr. Rodriguez Ottolengui of New York. The public is invited.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday noon, December 23, 1916, the number of deaths reported was 239, against

242 for the same period last year, with a rate of 16.39 against 17.49 last year. There were 35 deaths under one year of age, against 40 last year, and 69 deaths over 60 years of age, against 76 last year.

The number of cases of principal reportable diseases were: diphtheria, 49; scarlet fever, 23; measles, 15; whooping cough, 1; typhoid fever, 3; tuberculosis, 32.

Included in the above were the following cases of non-residents: diphtheria, 10; scarlet fever, 9; typhoid, 1.

Total deaths from these diseases were: diphtheria, 5; tuberculosis, 15.

Included in the above were the following deaths of non-residents: diphtheria, 1.

NEEDS OF THE BOSTON CITY HOSPITAL.—In previous issues of the JOURNAL we have commented from time to time upon the establishment and prosecution of social service work at the Boston City Hospital. The value of this work seems unquestionable, but the obtaining of means for its continuance is often a matter of considerable difficulty. The following appeal for funds for this purpose has recently appeared in the daily press, and deserves endorsement by all physicians and others interested in the work of the hospital:

"The reading public must be aware by this time of the valuable work being done at the Boston City Hospital by the medical social workers, but they may not know that this work has been made possible so far through the generosity of a small number of persons.

"The committee in charge of the work now reluctantly appeals to the public for liberal contributions. This work has been done at the hospital for only two years, and yet in that time has cared for 2126 patients. It is estimated that many times this number need and could be permanently benefited by the oversight and direction given by the medical social workers to the patients referred to them by the hospital staff.

"In addition to the estimated increase of cases demanding the after-care of a social worker under ordinary circumstances, there is now the crying need of special service for the infantile paralysis victims; 389 cases of this much dreaded disease had been admitted to the hospital up to the first of November, about 90 per cent. of whom are under five years of age.

"The hospital is not yet equipped to carry out the long continued medical after-care required for these little patients. No one need hesitate to send a small sum. That 10x1 equals 10 is an encouraging fact, be it dimes or dollars; and one thousand times \$5 just as much as five times \$1,000 equals \$5,000.

"If one thousand readers of this appeal will send small contributions they will help a long way towards paying expenses. In fact, in the words of the old song:

"Remember that many can always help one,
While one cannot always help many."

RACHEL SHERMAN THORNDIKE.
(Mrs. Paul Thorndike, Chairman.)

"All contributions sent to Mrs. George H. Monks (checks payable to Olga E. Monks, treasurer), 67 Marlboro street, Boston, Mass., will be gratefully received and expended with careful economy by the committee.

"Anyone wishing to know details of the work will find them in a short report which will be sent upon receipt of a request for it, addressed to the secretary, Mrs. Herbert L. Burrell, 993 Charles River Road, Cambridge, with a 2-cent stamp enclosed."

WESTBOROUGH STATE HOSPITAL.—The thirtieth anniversary of the opening of the Westborough (Mass.) State Hospital was observed at a meeting held at that institution on December 7 under the presidency of Dr. N. Emmons Paine, first superintendent and present chairman of the board of trustees. Addresses were made by Dr. Paine, by Dr. Henry I. Klopp, superintendent of the State Hospital at Allentown, Pa., by Dr. John L. Coffin and by Dr. John C. Sutherland, dean of the Boston University Medical School.

NEEDS OF INFANTS' HOSPITAL.—The directors of the Infants' Hospital have recently made another appeal to the public for subscriptions to enable the continuance of its work during the coming year. A similar appeal a year ago raised the sum of \$13,425.50.

"The hospital is in need of about the same amount of money in order to run it to capacity during 1917. The most important instrument in saving the lives of the sick babies of the poor is a hospital devoted to that end. This is the work of the Infants' Hospital, which is the only hospital in Boston where babies alone are received in its wards. It is a charitable institution, which takes care of sick babies from everywhere, and the need in Boston for free beds for babies is greater now than it has ever been before. Frequently the hospital is so crowded that it is necessary to put the babies on the waiting list.

It is earnestly hoped that the present appeal will again make it possible to continue to save the babies for 1917. Subscriptions may be mailed to the Infants' Hospital, 55 Van Dyke street, Boston."

POLIOMYELITIS IN MASSACHUSETTS.—On December 18, the number of cases of poliomyelitis reported in Massachusetts during the month of December, reached a total of thirty-six, making 1916 cases since the beginning of January.

MASSACHUSETTS COLLEGE OF PHARMACY.—It is announced that the Massachusetts College of Pharmacy has recently received an anonymous gift of \$550,000, which is to be devoted to the

construction of its projected new building on Longwood Avenue, Boston.

HOSPITAL BEQUESTS.—The will of the late Peter P. F. DeGrand, who died in 1855, contained bequests of \$25,000 each to the Boston Lying-in Hospital, and the Boston Female Medical Education Society, these gifts to become operative upon the death of three annuitants. Petition has been made, however, to terminate the trust in whose hands the estate is lodged, by paying these and other legacies.

HARVARD MEDICAL SCHOOL FREE LECTURES.—The Faculty of Medicine of Harvard University has announced the following annual course of free public lectures to be given at the Harvard Medical School on Sundays, at 4 p. m., in 1917.

Jan. 7, Dr. Francis G. Peabody, "Alcohol and Efficiency"; Jan. 14, Dr. Hugh Cabot, "The Care of the Wounded with the British Expeditionary Force in France"; Jan. 21, Dr. E. W. Taylor, "Infantile Paralysis; Precautions Necessary and Unnecessary"; Jan. 28, Dr. W. T. Porter, "'Shock' in the Trenches"; Feb. 4, Dr. J. L. Morse, "Feeding and Its Relation to the Infant's Development"; Feb. 11, Dr. F. J. Cotton, "The Development of Employer's Liability Insurance in Accident and Sickness"; Feb. 18, Dr. E. H. Place, "Does It Pay to Have the Contagious Diseases During Childhood"? Feb. 25, Dr. Percy G. Stiles, "Sleep"; March 4, Dr. L. M. S. Miner, "Diseases of the Teeth and the Use of the X-ray in Their Diagnosis and Treatment"; March 11, Miss Ida M. Cannon, "Social Service in Medicine"; March 18, Dr. Cleveland Floyd, "Tuberculosis; Its Cause and Prevention"; March 25, Dr. W. B. Cannon, "Methods of Medical Progress"; April 1, Dr. C. T. Brues, "Fleas and Other Insect Parasites in Their Relation to Public Health"; April 8, Dr. J. Bapst Blake, "Accident and Injury"; April 15, Dr. Paul Thorndike, "Urinary Troubles in Elderly Men" (to men only); April 22, Dr. W. H. Robey, "Some Facts and Fancies About Heart Disease."

FRAMINGHAM TUBERCULOSIS INVESTIGATION.—In the issue of the JOURNAL for November 30, we commented editorially on the projected tuberculosis investigation to be undertaken at Framingham, Mass., by the National Association for the Study and Prevention of Tuberculosis. The executive officer in charge of this experiment is Dr. Donald B. Armstrong of New York. The following statement by Dr. Armstrong relative to the plans and methods of investigation to be adopted, has recently been published in the daily press.

"We desire to carry on a dignified and earnest effort in disease control and health creation. We realize that success is entirely de-

pendent upon the people of Framingham, their co-operation, their helpfulness and good will.

"With the help of the Framingham doctors, we want to try first to discover all of the dangerous cases of tuberculosis, those that may be infecting babies and school children. We want to see that these people are provided with adequate medical and nursing care.

"This is, of course, the first step and may lead doctors and nurses to other people exposed to the disease, and still only slightly infected people, who can be saved from further development of the disease by advice and encouragement and help along the lines of hygienic living, pure air, good food, rest, etc.

"Of course, only the best of acknowledged treatment methods will be suggested, the main emphasis being placed on home care, and on the protection of the non-infected, including the prevention of new cases.

"Every effort will be taken in the future to make clear the nature of the demonstration and what it really is. While somewhat illogical it may be worth while at this time to emphasize briefly what it is not.

"In the first place the demonstration is not an advertising scheme for any one, but a straightforward earnest attempt to prevent disease. Framingham was selected not because it was an unhealthy town, but because it was an average industrial community with an excellent co-operative spirit, promising success in the demonstration.

"No unusual experiments are contemplated, but only the best, authoritatively recognized methods of diagnosis and treatment will be advocated. Those interested in the demonstration can use no coercion, for they are without authority. For this reason particularly the success of the work depends on the sympathy and co-operation of Framingham people. The work will, of course, be carried out in all parts of Framingham.

"Every effort will be made to prevent Framingham from becoming a mecca for tuberculosis cases. The funds available will not be expended for new hospitals or sanatoria, or for an outside medical staff. On the contrary, as far as hospital and medical facilities are concerned, the work will be carried out on a basis of existing State and nearby institutions and through the help of the Framingham medical men.

"The work, if successful, will be of great importance not only to the tuberculous problem, but also to health work of all kinds. Framingham should realize that the eyes of the medical, health and scientific worlds are upon her.

"If, at reasonable expense, with the co-operation of everybody in the community, she can be made the healthiest spot in the United States, the town most free from contagious disease, especially tuberculosis, she will have won a world wide fame as a hygienic Utopia and will have done a world service."

MASSACHUSETTS MEDICAL SOCIETY.—The Special Committee on Workingmen's Compensation of the Massachusetts Medical Society has held several meetings and has formulated a plan by which the injured workingman can have the medical attendant of his choice without sacrificing the medical benefits of the act. The committee has been in consultation with the Standing Committee of the Society on State and National Legislation, in accordance with the terms of its appointment, and further consultation is to be held in the near future.

Massachusetts Medical Society.

SPECIAL MEETING OF THE COUNCIL.

DECEMBER 20, 1916.

HEALTH INSURANCE.

A SPECIAL meeting of the Council was held at the Boston Medical Library, Wednesday, December 20, 1916, at 11 a.m. The President, Dr. Samuel B. Woodward, was in the chair, and the following 94 councilors and several members of the standing committees on State and National Legislation and on Public Health were present:

BARNSTABLE
C. W. Milliken
BRISTOL NORTH
Sumner Coolidge
R. D. Dean
BRISTOL SOUTH
E. F. Cody
E. P. Curry
W. A. Dolan
R. W. Jackson
ESSEX NORTH
F. B. Pierce
R. V. Baketel
I. J. Clarke
G. E. Kurth
E. H. Noyes
J. J. O'Sullivan
ESSEX SOUTH
Emile Poirier
N. P. Breed
J. P. Donaldson
P. P. Johnson
W. G. Phippen
FRANKLIN
G. P. Twitchell
HAMPDEN
E. P. Bagg, Jr.
T. S. Bacon
G. D. Henderson
M. B. Holkins
A. G. Rice
HAMPSHIRE
J. S. Hitchcock
MIDDLESEX EAST
C. J. Allen
E. C. Fish
MIDDLESEX NORTH
J. V. Meigs
J. J. Cassidy
J. H. Lambert

MIDDLESEX SOUTH
W. D. Swan
M. H. Bailey
H. T. Baldwin
S. O. Baldwin
C. H. Cook
H. F. Curtis
D. C. Dow
A. W. Dudley
G. W. Gay
C. M. Hutchinson
A. A. Jackson
S. F. McKeen
G. A. Miles
C. E. Mongan
C. E. Prior
Goldfrey Ryder
F. W. Taylor
J. O. Tilton
G. W. W. Whitting
NORFOLK
T. F. Greene
J. W. Bail
E. H. Brigham
F. W. Carr
T. J. Coyne
R. W. Hastings
G. W. Kaan
Bradford Kent
Harry Linenthal
T. J. Murphy
J. A. Reilly
Victor Safford
T. M. Shea
F. W. Sleeper
R. T. Stearns
NORFOLK SOUTH
J. C. Fraser
E. N. Mayberry

PLYMOUTH
Gilman Osgood
F. G. Wheatley
SUFFOLK
G. W. W. Brewster
W. L. Burrage
David Cheever
E. A. Codman
J. A. Cogan
G. A. Craigin
E. G. Cutler
R. L. DeNormandie
Albert Ehrenfried
C. M. Green
W. A. Morrison
Abner Post
Anna G. Richardson

SUFFOLK (Cont.)
W. H. Robey, Jr.
G. C. Smith
Mary A. Smith
Peter M. Smith
Richard M. Smith
H. F. Vickery
WORCESTER
G. O. Ward
W. P. Bowers
Homer Gage
A. G. Hurd
F. H. Washburn
S. B. Woodward
WORCESTER NORTH
E. L. Fiske

The reading of the minutes of the last meeting was dispensed with by vote. The President read the call for the meeting, signed by C. E. Mongan and ten other councilors, all from the Middlesex South District Medical Society, and stated that he had received about a dozen letters asking for a special meeting from councilors of the Norfolk District Medical Society. The purpose of the meeting was to "consider the proposed Health Insurance Legislation," and he stated that no other subject would be considered except that he would entertain a motion expressing sympathy to the President of last year, Dr. C. F. Withington, in his serious illness. *Voted*, That the Secretary be instructed to write Dr. C. F. Withington that the Council expresses its heartfelt sympathy, and hopes that he will soon recover his health.

Dr. W. A. Dolan moved, and it was seconded, that the debate be unlimited, and it was so voted.

Dr. F. J. Cotton, for the special committee of the Council on Industrial Health Insurance, presented the report of his committee that had been sent to councilors with the notices of the meeting. It follows: He wished to delete these words from the middle of Section 2: "From this panel so constituted, the carriers may indicate to their insured a preference, but—" Also at the end of Section 4, insert: "but in no case shall they decide against the provisions of the earlier parts of this section." Dr. Cotton thought that his committee had done what it was asked to do by the Council, and that it should receive instructions from the Council as to further action or be discharged. On motion by Dr. Cook it was *Voted*, That the report of the Committee on Industrial Health Insurance be accepted as a report of progress and the committee continued.

WORKMEN'S SICKNESS INSURANCE, whether in the form of the Doten bill or in other guise, is largely a medical question. If a bill providing for it should be passed without more care than was evidenced in the passage of the present Accident Compensation Law in this State, it seems probable not only that medical care of the injured workman would be poor, but that the whole practice of medicine in the Common-

wealth would be disrupted; for the law seems likely to include, in its provisions, *families* as well as *actual wage-earners* within a \$1200 limit.

Our profession has a record for altruism, but to ask us to sacrifice ourselves to a plan which we are not sure of as a benefit even to our patients would be absurd!

The undersigned—a committee appointed by the Council of the Massachusetts Medical Society, in June, 1916, to look after the interests of the profession in this matter—have given a good deal of study to the question, and have tried to profit by the work previously done by others. Also, we have kept in touch with the Recess Committee of the Legislature, designated to consider this among other questions for report to the coming legislative session.

It has seemed to us timely to present to the profession a draft of provisions that represent what we may call the irreducible minimum of medical rights. In the drafts for bills, and in the bills introduced for such legislation to date, the medical side has been strangely neglected.

We understand that the proponents of the Dotten bill have now in preparation changes and amendments to meet this neglect. Nevertheless, through hoping that others may protect our interests or rights, we feel it the duty of medical men to protect themselves.

The draft herewith submitted is put before the medical profession of the State for consideration and discussion. It should not be given out as representing the opinion of the profession until we have more expression of opinion.

There seems to be some divergence of view in the profession as to the value of the main principle involved. This is natural. Your committee may well be wrong in this, but we have felt that it was not within our province to pass on this very large question; we have felt that it was for us only to detail the conditions necessary, *in case such a bill should pass the Legislature*, in order that the workingman should be cared for, and cared for properly, without utterly ruining the doctor.

We believe, by the way, that ruining the doctor *would often kill or spoil the workingman*.

The draft herewith presented seems to us to represent the minimum demands we *must* make if the proposed legislation is to go through. *More unfavorable conditions must result in inferior medical service*, and so work to the defeat of the intent of such legislation.

The workingman will necessarily hesitate in his adherence to a scheme that does not take proper care of him. The doctor is far within the edge of his rights, if he wants to know where he comes in.

SECTION 1. Medical, Surgical and Nursing Attendance. All necessary medical, surgical and nursing attendance and treatment shall be

furnished by the carrier from the first day of sickness, during the continuance of sickness, but not to exceed twenty-six (26) weeks of disability in any consecutive twelve (12) months. In case the carrier is unable to furnish the benefit provided for in this section, it must pay the cost of such services actually rendered by competent persons at a rate approved by the Commission. Competent physicians and surgeons shall mean those upon the panel, as provided for in Section 2. By the rate approved by the Commission shall be meant the rate established in Section 4. By furnished (lines 3 and 6) shall be meant furnished as provided in Section 2.

SECTION 2. Medical and Surgical Service. On or before, every physician and surgeon who, being legally qualified to practise in Massachusetts, shall desire to serve under this act, shall register for this purpose with the Commission, and each carrier shall be, within a reasonable time after such date, furnished by the Commission with a list of physicians and surgeons so registered. The patients shall have free choice among the physicians or surgeons upon this panel, subject to the physician's or surgeon's right to refuse service on grounds specified in regulations made under this act by the Commission, provided, however, that no physician or surgeon on the panel shall have on his list of insured patients more than 500 insured families or more than 2000 insured individuals. The Commission shall, upon presentation of satisfactory evidence that any physician or surgeon upon the panel is incompetent, neglectful of his duty, or dishonest, suspend or remove such physician or surgeon from the panel, and decision of the Commission shall be final.

SECTION 3. Appointment of Physicians and Surgeons as Referees. The Commission shall establish Districts and shall appoint a physician or surgeon as referee in each District; such referee shall be paid by the Commission a salary not to be less than \$ per annum and shall devote his entire time to the work. It shall be the duty of such referee to supervise the character of the medical and surgical service in the interest of the insured patient, the physician, the carrier and the Commission. He shall decide all disputes involving medical or surgical questions that arise between insured patients and physicians, between physicians serving upon the panel, between insured patients and carriers, or carriers and physicians, including the termination of disability. His decision may be appealed from to the medical advisory board, whose recommendation shall be given to the Commission, whose findings shall be final.

SECTION 4. Payment of Physicians and Surgeons. Physicians and surgeons, serving upon the panel, shall be paid by the carriers for med-

ical or surgical services rendered to the insured a fee per visit that shall be not less than the average minimum fee for services rendered by physicians and surgeons of the locality in similar cases. Services rendered in maternity cases shall include previous supervision, when applied for, for at least six (6) weeks previous to the delivery, and supervision for four (4) weeks after birth, included as a part of the care of childbirth.

In case of dispute between physicians and carriers as to charges for services, the Commission shall have the power to decide, and their decision shall be final, but in no case shall they decide against the provisions of the earlier parts of this section.

SECTION 5. Medical and Surgical Supplies. Insured persons shall be supplied by the carrier with all necessary medicines, surgical supplies, dressings, eye glasses, trusses, crutches and similar appliances prescribed by the physician, not to exceed in cost for any one insured person the amount of \$ in any one year.

SECTION 6. Hospital Treatment. Hospital or sanatorium treatment and maintenance shall be furnished upon the approval of the medical officer of the carrier instead of all other benefits, except as provided for in Section , with the consent of the insured member or that of his family, when it is not practicable to obtain his consent. The carrier may demand that such treatment and maintenance be accepted when required by the contagious nature of the disease, or when, in the opinion of its medical referee, such hospital treatment is imperative for the proper treatment of the disease or for the proper control of the patient. Cash benefit may be discontinued during refusal to submit to hospital treatment. Hospital treatment shall be furnished for the same period as cash benefit. This benefit may be provided in those hospitals and sanatoria with which the carriers have made satisfactory financial arrangements, provided that such hospitals are of a standard approved by the medical advisory committee. A charge of \$15.00 per week shall be considered a proper charge per patient for hospitals and sanatoria.

SECTION 7. Maternity Benefits. Maternity benefits shall consist of all necessary medical, surgical and obstetric aid, materials and appliances which shall be given insured women and wives of insured men. A weekly maternity benefit payable to insured women equal to the regular sick benefit of the insured for a period of ten (10) weeks, of which at least six (6) shall be before delivery, shall be made on condition that the beneficiary abstain from gainful employment during the period of payment.

SECTION 8. From a list of twenty (20) physicians or surgeons recommended by the Massachusetts Medical Society and the Massachusetts

Homeopathic Medical Society, each in proportion to its total membership, the Governor shall appoint a Medical Advisory Committee of five members to serve respectively five, four, three, two years and one year. Vacancies on this board from death or resignation shall be filled for the unexpired term. Each succeeding appointment, except for the filling of such vacancies, shall be for five years. The members of this Committee shall be paid only for actual expenses incurred in the performance of their duties. It shall be the duty of this Committee: (1) to advise the Commission on medical matters; (2) to standardize contracts with hospitals and dispensaries; (3) to hear and act on all disputes arising, including such as are referred to them on appeal as provided in Section 3. Their findings shall be transmitted to the Commission for approval and adoption.

It is recommended that, owing to the medical questions involved in the proposed act, the act be so drawn that there shall be medical representation upon the Commission.

F. J. COTTON,
W. H. MERRILL,
F. W. ANTHONY.

Dr. C. E. Mongan presented the following resolution and moved its adoption. Then he addressed the Council at length on "Health Insurance from a Different Standpoint." (See abstract, page 35).

TO THE SPECIAL COMMISSION ON SOCIAL INSURANCE OF THE COMMONWEALTH OF MASSACHUSETTS:

Resolved, That realizing the importance of the proposed Health Insurance Laws for Massachusetts, and appreciating the great change that would come in the social conditions of the people of the State, and appreciating further the great rôle the medical profession would play in the proper administration of such laws, and feeling that the citizens of Massachusetts should be more fully informed as to the scope and meaning of the proposed legislation, we, the Council of the Massachusetts Medical Society, assembled in meeting for the purpose of considering health insurance, most respectfully request that no definite plan on Health Insurance or recommendation in regard to health insurance, be submitted to the Legislature, until a further knowledge of the proposed laws be spread among the citizens of the Commonwealth.

Dr. Cotton made some remarks on different points raised by Dr. Mongan, especially as to the constitution of the committee on health insurance of the American Medical Association, of which he was a member. In his opinion, the Workingmen's Compensation Act should be modified before health insurance laws are placed on the statute books. He thought the Society would make a mistake in going on rec-

ord at this time against the principle of health insurance. Dr. Dolan, as a delegate from the Fall River Medical Society, offered as an amendment to Dr. Mongan's resolution: "That the councilors of the Massachusetts Medical Society oppose any legislation on health insurance."

Dr. Anthony thought that Dr. Mongan's resolution should be passed, and was not in favor of the amendment, agreeing with Dr. Cotton as to the inadvisability of opposing health insurance legislation at this time because physicians' motives might be questioned. Dr. Dolan's amendment being seconded and put to a vote, was lost. Dr. Mongan's resolution was reread by the president, seconded and carried unanimously.

Dr. W. I. Clark, a member of the Standing Committee on Public Health, who had attended the conference on accident and social insurance at Washington, December fifth to ninth, 1916, at the instance of the President, as an unofficial representative of the Massachusetts Medical Society, reported briefly on his impressions of that conference. In his opinion, the expense of health insurance under the existing bills, would be very heavy for the State, and they make no provisions for the prevention of accidents or sickness; the conference seemed to him to be a fair one, three parties being represented. The American Association of Labor Legislation, the standard manufacturers of the United States, and organized labor. He felt sure that the United States Public Health Service is in favor of some sort of health insurance.

Dr. Mongan made a motion that the president of each District Medical Society be empowered to expend from the treasury of the Society not more than \$50 for the purpose of spreading information as to health insurance in his district. When Dr. Dolan and Dr. Green had explained that the present special committees on health insurance and Workingmen's Compensation were authorized by the vote of the Council, October 4, 1916, to expend money subject to the approval of the President and the Committee on Membership and Finance, Dr. Mongan withdrew his motion.

Adjourned at 1.05 p.m.

WALTER L. BURRAGE,
Secretary.

ABSTRACT OF REMARKS OF DR. C. E. MONGAN ON HEALTH INSURANCE BEFORE THE COUNCIL OF THE MASSACHUSETTS MEDICAL SOCIETY, DECEMBER 20, 1916.

I SIGNED the request to the President to call this meeting, and I am going to speak in regard to health insurance, but I will speak on a phase of this question which has not been

touched upon by any of the speakers who have appeared before our Society; nor has anything been written about it. Before entering on the discussion of health insurance, I desire to offer the following resolution (See page 34).

I have some words to say in explanation of my position. Your Committee on Industrial Health Insurance had appealed in print that the profession become interested, and at the October meeting of the Middlesex South District, a committee of eight was appointed to interest and inform the medical profession as to the scope and nature of health insurance. The following committee was appointed:

Dr. Charles E. Mongan, of Somerville, Chairman.

Dr. Enos H. Bigelow of Framingham.

Dr. P. Challis Bartlett of Newton.

Dr. H. A. Wood of Waltham.

Dr. Felix McGirr of Cambridge.

Dr. John F. O'Brien of Charlestown.

Dr. Frank W. Plummer of Malden.

Dr. Frank E. Bateman of Somerville, Secretary.

Our committee quickly arrived at the conclusion that the subject of health insurance was a matter that should interest the profession of the State, and the committee appealed to the President of our Society, asking his aid for the purpose of interesting the profession at large. President Woodward most kindly offered to do all in his power to assist. The result of our combined efforts is this meeting, and I think I ought to say here that President Woodward fully appreciates the intricacies of the problem that confronts us, a problem that not only concerns the medical profession, but one of those complex social questions, the solution of which affects every man, woman and child.

Health insurance,—whence comes it; who asks for it? There is not a medical society, there is not a lay society, there is no body of organized men in Massachusetts that has asked for this legislation, no general practitioner, nor special practitioner, as far as I have been able to ascertain. But there is a society called the American Association for Labor Legislation, with headquarters at New York, which has asked for this legislation. This Association is allied to an International Association which has its headquarters in Basel, Switzerland. The international organization has sixteen foreign branches in as many foreign countries. It has nothing to do, directly or indirectly, with organized labor. The American branch is said to have an enrollment of 3000 people. In this enrollment we find professors of economics, professors of statistics, philanthropists, actuaries, statisticians and people interested in social service; very few general practitioners of medicine. This Association is the head and front of the agitation for health insurance in this country. You may understand how powerful this organization is when

I say that it will introduce health insurance bills in the legislatures of twenty states in the United States during the coming year.

In stating the subject of health insurance, we are surprised to find that the first modern attempt at health insurance was made in Russia in 1806, when the Czar issued an order requiring proprietors of mining and metallurgical industries who employ 1000 men to have hospitals and accommodations for sick or injured employees. That was the rule of the empire until 1866, when another order was issued during the cholera epidemic, compelling every industrial organization of 1000 men or more to provide a bed for every 100 people, and to have a doctor in attendance; and every factory where women were employed to have obstetrical provision. Outside of Moscow a factory employing 500 or more workmen was required to have one bed for each 100 workmen, with a resident physician. When the number of workmen exceeds 3000, two physicians must be employed, one of whom must reside at the factory. From this system has grown the great system of state medicine of Russia, which Mr. Rubinow in his book on "Standards of Health Insurance" praises very highly.

Germany adopted health insurance in 1883, Great Britain in 1912. The countries that have compulsory health insurance are Russia, Germany, Austria, Serbia, Great Britain and Ireland. In every one of these countries, with the possible exception of Great Britain, the individual is submerged. Their governments are autocratic. The countries that have voluntary health insurance are France, Switzerland, and Sweden. You will notice that in those countries the individual stands out as having some rights. He is not submerged. Does one set of countries imply collectivism, the other set imply individualism? It is well worth while to get down to the underlying principles that govern the American Association for Labor Legislation.

The adoption of health insurance will affect every man who practices medicine; will affect every one who has anything to do indirectly with the practice of medicine. It will affect hospitals, nurses, convalescent homes, and sanatoria. It is the first step in the socialization of the practice of medicine. Experts who have studied health insurance see in it the first step toward the State taking over the practice of medicine.

This subject is now called health insurance, but it was not always so called. It started out as sickness insurance, but that title, according to Mr. Rubinow's book, was found to be unsatisfactory. No one wants to be sick. Everyone wants to enjoy good health, so the name was changed from sickness to health insurance.

What does that legislation propose? In Massachusetts it proposes to insure every wage-earner who earns \$25 a week or less. It proposes that such wage-earner shall have in return

for what he pays into the insurance fund a certain amount of cash benefit, medical attendance, nursing attendance, surgical attendance, and hospital attendance. In other words, it asks the Commonwealth to divide its citizens into two great classes, those who earn \$25 a week or less, and those who earn more than \$25 a week. The proponents say that the cause of poverty is sickness and the cost of sickness, so that we may conclude that if a citizen of Massachusetts earns \$25 or less he is poor. The State must aid him. The State must help him out with his medical bills. Therefore, we have a definition of poverty according to the advocates of this measure, and that definition is to be written into the laws of the Commonwealth.

There is another association that is interested in philanthropy, working in the United States. It is called the Survey Associates. Some of the members of this association are also members of the American Association for Labor Legislation. The Survey Associates are frank and more candid than the American Association for Labor Legislation, in that they have a platform, upon which they boldly stand as advocates of the socialization of the practice of medicine.

The American Association for Labor Legislation has a social insurance committee, which is made up of actuaries, statisticians, professors of economics, and two physicians, neither one of whom has been a general practitioner of medicine, as far as I have been able to learn. Nearly every member of this committee has written books on social insurance or economics; many of them have been employed by the State or Federal authorities as investigators of industry. At a hearing before the Special Social Insurance Commission of Massachusetts at the State House, one of the over-enthusiastic office holders of the American Association for Labor Legislation said that any man, or body of men, who stood in the way of health insurance would be promptly brushed aside, so sure was he in his opinion that health insurance laws would be passed this year. I have given you these thoughts that you may understand what sort of a body it is that proposes this legislation; also I think you ought to know the attitude of some of its officials.

The proposition is practically an indictment of the medical profession of Massachusetts. They say we have not taken care of the poor, the sick poor, and now they are going to take it out of our hands, notwithstanding the fact that nobody in Massachusetts asks for such legislation. They are going to give us a cure for poverty by taking away from us the cure of the sick, and putting it in the hands of a commission appointed by the governor. It will be the most important commission that ever came to Massachusetts. It is said by the advocates of this measure that this commission will have jurisdiction over one million wage-earners in this

State. What possibilities there will be in this for a political machine in the hands of a not over-careful governor, I leave to your imagination. The supporters of this legislation practically state that we have one million poor in the state of Massachusetts, but the report of the bank commissioners tells us we are far from being a poverty-stricken community, for there are in the savings institutions of this Commonwealth, \$1,053,000,000 of savings, not savings industrially invested, but savings actually in savings banks. Yet the proponents of this legislation tell us we are poor, and a party of New York altruists make a journey over from New York to Boston to instruct us in what way we may abolish poverty.

Inferentially they say the medical profession has been lagging behind, so under this form of insurance doctors are to be organized, and the doctors so organized, under the supervision of the State, will attend the insured. Will that be introducing among the doctors "class"? Will the doctors who are called panel physicians or insurance doctors be considered on a lower level than the other choice spirits of our profession who will find their practice among patients who earn more than \$25 a week? Think it over.

There is another element that enters into our study of health insurance in this country, and that is the life insurance companies. The Metropolitan Life Insurance Company has made several health surveys, one of which is quoted in the report on social insurance of the American Medical Association. This report has the appearance of a scientific document by being published in the medical journal, but the sickness survey was not made by physicians, but is a mass of evidence on sickness collected by laymen from other laymen. The object of the Metropolitan Life Insurance Company in making this health survey is not clearly known, but was done probably for some reasons of policy peculiar to the insurance company. There are no reliable nor semi-reliable statistics on sickness in the United States. All attempts at compiling statistics of sickness have been ineffectual, and one man's guess is as good as another's. In July it is said that the Metropolitan Life Insurance Company made a sickness survey in the City of Boston, and through its employees secured returns of sickness from its 50,000 industrial policy holders. The responses received were said to have been 97,000, 2% of whom were said to be sick. The actuary takes those figures and he computes the money loss in wages of the sick for the day, and he finds out the money loss for a week, then for a year, and by the time he has finished his actuarial investigations, the money loss for sickness in the United States is stupendous. It is upon such statements that the advocates of this measure say that health insurance is necessary in the United States.

The insurance is to include everybody who

earns \$25 a week or less. In return there is to be a cash benefit equal to two-thirds of the weekly wages, for not more than 26 weeks in any consecutive 12 months. If the person dies, \$50 is paid. There are also maternity benefits and cash benefits to dependents, dentists' bills, bills for eye-glasses up to \$50. In maternity cases, the cash benefit for the woman shall be 2% of her husband's salary for 10 weeks.

Who is going to take care of all this, and what is to be the cost? There is not an actuary or statistician who will tell you what the cost of this thing is to be in Massachusetts. In Germany the cost has been 4% of the workers' wage. Dr. Frankel at Cincinnati, in a lively discussion where no two advocates agreed as to the cost, said it would be more than 4%, and that no workman in the United States would stand a tax of 4% of his wage for medical attendance. How many of you have patients who pay you 4% of their wages continuously for years?

How is the cost of this thing to be divided? The State is to pay one-fifth, the employer two-fifths, and the employee two-fifths, unless the worker earns \$9 a week, when the employer is to pay 48%, the employee 32%, and the State 20%, gradually working down to the worker, who earns \$5, who then pays nothing, while the employer pays 80% and the State 20%.

As to the organization. The Commission shall consist of three commissioners appointed by the Governor. The Doten Bill says no word about one of the commissioners being a physician. The draft of the American Association for Labor Legislation says that one commissioner shall be a physician. The State is to be divided into districts or insurance companies, consisting of 5000 people in each local association, making about 200 companies. The local insurance companies shall have boards of directors, made up of persons elected by a committee, which will be elected annually by employers and employees voting equally. Who will run that insurance company after a while? Do I go far afield when I say that the employees might be influenced in a short time by the employer whose favor they might desire to court?

In the Doten Bill there is the outrageous suggestion that the board of directors should have the power to make contracts for medical and surgical attendance. Then when you get the employer, and the employee, and the efficiency man of the employer, administering the affairs of the local company, your professional standing is gone, and the doctor simply becomes another employee, for he would be in the hands of the efficiency man.

When the supporters of this bill were asked as to the probable cost of maintenance, no one was willing to make a definite statement. The costs ranged all the way from four to twenty-seven millions. It may cost the workman

10% of his wages. With a central office, sub-central office, local company, panel doctors, contract doctors, supervising doctors, medical officers, and so on, there is no end to the expenses. In Europe after the war, the law is to be changed, not because of the war, but because of the expense. All writers on this subject are agreed upon this point. In Germany the law is to be changed so that the doctor who treats the patient will not be asked to give a certificate saying when the patient is fit to return to work, but the duty of sending the patient back to work shall devolve on the supervising doctor, and one of the recent suggestions to be incorporated into the law said that it will not only be the duty of the medical officer to give the certificate of good health, but it will be his duty to supervise the work of the attending physician to see that he has treated the patient properly and also that he has not given too expensive medication. The possibilities of this arrangement I leave to your imagination.

Sickness insurance! Did you ever think what that meant? It means that all sickness, no matter how acquired, will be paid for under this act. Do you think it is fair that the industrious man or woman in Massachusetts, who works faithfully and makes sacrifices for their families, should stand for the insurance against sickness of the riotous man or woman? Do you think it is fair? This bill makes no exception in the kind of sickness that afflicts the insured, nor does it except sickness however it may be acquired, so that the decent citizen is put in the same category with the man or woman who dissipates his fortune and his health. All are equal in health insurance.

Another point about the administration of the law: It will be possible under this law for the commission to approve or withhold approval of any hospital. That would mean that we would have the standardization of hospitals, which may be a good thing, and may not. Under the law as suggested, all kinds of political pull would be possible, and in the end, standardization may be a recommendation or it may not, according as political pull may prevail or may not prevail. Under the working of the law it is claimed that local companies, if they have a guarantee fund of sufficient amount, may erect hospitals and maintain them, may erect convalescent homes and maintain them, may erect sanatoria and maintain them. Maintenance of these institutions means the selection and the hiring of doctors and nurses at such prices as may suit the directors of the local companies.

One of the weaknesses of the German system is the convalescent home or sanatorium, where the insured while away their invalidity by taking part in the games in the pool rooms, bowling alleys and billiard rooms in the sanatoria. When called upon to return to work, the strenuous exercise at these games has been too much

for them, and they say they are too weak to enter upon their daily vocations.

Another one of the side lines of the German law is the prevalence of the so-called doctors' strikes. Since the adoption of the law in Germany up to 1911, there have been 1022 doctors' strikes due to a difference of opinion between the companies and the physicians as to the physicians' remuneration, and these conflicts have been very serious. Of these strikes, 921 were decided in favor of the doctors; to quote Mr. Rubinow, "this result alone would indicate that usually the medical profession had real grievances to contend with." So, in Germany, under a health insurance law, doctors do have real grievances. What would a doctors' strike mean? A strike presupposes a union; the union presupposes all the paraphernalia that goes with the union,—walking delegates, pickets, arbitration committees, and all the rest of it. Suppose, for instance, a woman is dying from a post-partum hemorrhage, and the doctor in attendance is in need of assistance. The assistant doctor is on his way, and is about to enter the house of the patient, when he is met by the peaceful picket on the sidewalk, who informs the doctor who is offering his aid that he must not enter the house of the sick person because she is being treated by a scab doctor. How beautifully foreign the whole picture! What an element to inject into the general practice of medicine as we have known it in Massachusetts. The remuneration of the German physician must have been at its lowest ebb when the down-trodden doctor was compelled to strike. Yet Mr. Rubinow, the high priest of health insurance, says these strikes were justified. "*O tempora, O mores.*"

To recapitulate: Social insurance, the child of Russia, was adopted by the German empire, an empire consisting of a homogeneous race of people to the number of sixty-five millions, with one center and one mind in control of the sixty-five millions. Was it medical, or socialistic, or militaristic expediency that caused Germany to adopt the child of Russia? Is the German workingman told, "You are insured against sickness, therefore you don't need much pay for your daily toil." Was he told, "You are insured against old age, and you need not worry about saving." Was he told, you must not worry about unemployment because you are insured against that, and you need not be sorry if you are thrown out of a job." Was it for the safety of the individual or the expediency of the empire?

In Germany the individual follows the line of endeavor of his father. If his father was a wood-carver, he is too, as probably was his grandfather and great-grandfather. This is all for the good of the empire.

Are you ready as citizens to engraft that sort of legislation upon the body politic of Massachusetts? Are you ready to put into the hands

of three men, selected by the governor of the State, such vast powers as this legislation demands, namely, the intimate care of the health of one million of people?

I will not trouble you further. As you walked up these stairs today, you probably looked intently upon those framed pictures which hang upon the walls, and you have studied many times those faces that bring back to you the memories of the great deeds those men whose faces look out from the frames have done. Those men worked well; they wrought well. They were your predecessors in the profession of medicine. They handed to you the care of the sick of the Commonwealth. They gave you that care as a heritage, as a trust. The names of those men, and the deeds they have achieved in medical science are written in the history of the world. It has been our ambition to hold ourselves up to the work of those men, to hand down to our posterity, as they have handed down to us, the function of caring, and caring well for the sick of Massachusetts. Now a body of men from another state ask you to change all that. These men who ask you to make this change talk in figures; they never talk in human units. There is nothing of human sentiment as I understand the human sentiment that exists between the patient and his physician. There is nothing of human sentiment in any of their writings. There is nothing of the underlying currents of religion. Their principles are socialistic, paternal, and antagonistic to American ideals. To men trained as you are to think in the proper way, I give you these thoughts. I ask you to withhold any support to this legislation that you might be inclined on the first impulse to give. I ask you to study faithfully this complex problem, fraught with stupendous changes for the citizens of Massachusetts. If you think it is a piece of legislation that is fitted to the needs and the conditions of the social life of this Commonwealth, support it. If you think it has no place in our body politic, refuse to give it your influence; but in any event, wait, and ask Massachusetts to wait until you and the citizens of the State fully comprehend the import of it all.

Obituary.

JABEZ FISHER, M.D.

JABEZ FISHER, medical practitioner, meteorologist and musician, died at his home in Fitchburg, December 15, 1915, at the age of 92.

He was born in Cambridgeport, April 30, 1824, the son of Jabez and Sarah Livermore Fisher, and was graduated from Harvard Medical School in 1850, joining the State Medical Society in that year

and settling in Fitchburg the following year. In 1855 and 1856 he was elected to the Massachusetts Senate, and the next year relinquished practice and grew fruit as a business. He became organist of the Universalist church in his town and at the time of the Peace Jubilee in Boston, 1870, trained a choir of voices to take part in the great festival. He wrote on musical, religious and social service topics and was especially interested in meteorology. For more than half a century he kept daily records of the weather and furnished data to the United States Government. On several occasions his records were used in court in the settlement of questions as to the weather.

Dr. Fisher was twice married and is survived by a son.

Correspondence.

INDUSTRIAL HEALTH INSURANCE.

Mr. Editor:

The *Doten Bill* vitally affects not only physicians, but many other professions and industries. It should be discussed from a broad American viewpoint even by physicians as, if passed, it means sweeping and revolutionary changes in our whole social structure of more importance, possibly, than anything which has occurred in the history of our government. Among other things it will mean:

1. Prussianizing the medical profession.
2. Creating caste distinctions such as this country has never seen, based upon wages; not to mention the caste system forced on the medical profession through either a panel or contract regulation.
3. Practically removing the right of the laboring classes to choose their physician or method of treatment and forcing certain ones—the Christian Scientists, for instance—to be taxed in support of methods which, to them, are unacceptable on any terms.
4. Creating a commission of high-salaried officials with czar-like powers, who will be able to levy taxes on labor, on capital and on the state. In so doing they will reduce wages, add to the high cost of production and increase general taxation.

The administration of this movement will be expensive beyond all estimates and this commission has the power to draw *any amount needed*, as follows: Forty per cent. from wages, forty per cent. from the employers of labor, twenty per cent. from the State Treasury.

What will it need? Enough to provide for all cost of sickness, physicians' and surgeons' fees, medicine, surgical and nursing supplies, nurses, hospitals, sanitariums, sick benefits (two-thirds wages, twenty-six to fifty-two weeks), dentistry and dental supplies, maternity benefit, death benefit, benefit for widows and orphans.

This is fine! But does the laboring man and the employer, as well as the average citizen, want this measure forced on him without regard to the costs? Do the working people want to be forced into a class by themselves where they cannot employ their own physician without losing all they had been compelled to pay? Do they want an *aristocracy* based on right to employ a private physician or healer?

Workmen should be given a chance to know that this *Doten bill* makes insurance in the state society compulsory for everyone earning less than \$100.00

per month. How about those getting \$101.00 per month? If good for the poor, why not for the rich?

Employers should consider whether they can stand another tax on industry to the extent of the payments demanded on every man they employ.

Tax payers should be warned that the Doten bill authorizes this commission to levy an unknown amount on the state treasury.

Retail druggists will be affected seriously by this bill, as all drugs, surgical and nursing supplies are furnished by the commission.

Members of fraternal orders should know that they have to pay their full assessment in this society without expectation of full benefits, as benefits under this bill are to be reduced by the amount an individual is receiving from all other sources.

Insurance companies will thus be virtually forced out of business so far as accident or sick benefit business is concerned. Remember that insurance is compulsory for all in the very large class indicated by the bill.

Physicians, in addition to the fact that your profession is to be divided by law into consulting physicians, panel physicians and general down-and-outers, not to mention the pure aristocrats of the profession who will cater to the wealthy only, consider the possible tendency of a large part of the profession to degenerate into contract doctors, political wire-pullers and grafters.

Finally, do free American citizens want it? Is it American? Is it democratic? Do we wish to follow in the footsteps of Germany, Russia and England without the most careful investigation? Do the thrifty and industrious and healthy wish to be taxed for the benefit of the natural loafer who makes himself dependent through his own habits and vices? Those of us who have had experience in filling out blanks for sick benefits know the tendency. Do we want more of it?

Personally, the writer believes that social health insurance, as conceived by the Doten bill, will prove a blight on our civilization, and that there has never been a bill introduced carrying greater opportunities for evil in the form of graft and extravagance. Until something better can be framed it is hoped that our legislators will have common sense enough to turn it down in its entirety. Because we need a horse, there is no reason why we should accept an elephant.

Very truly yours,

WILLIAM W. HARVEY, M.D.

114 Fenway, Boston, Dec. 20, 1916.

INDUSTRIAL HEALTH INSURANCE.

Office of the Medical Examiner,
Third Bristol District,
Fall River, Mass.

December 21, 1916.

Mr. Editor:

Your Health Insurance Issue of December 21 was a bitter disappointment. With the exception of Dr. Hurley's article, the wrong note was struck all the way through. Dr. Cotton's statement that health insurance would come and that we would have to make the best of it indicates a surrender even before an attack is made. Were it made to men with the common sense of bricklayers or longshoremen, it would undoubtedly meet with a rather warm reception. Dr. Anthony's statement that we must not forget that ten thousand succeeded in the British Medical Association would strongly indicate that he is not ready to take any chances and that quitting before the fight is opened is also the best policy to him. Your editorial emphasizing the humanitarian side of the question is probably capable of inspiring no greater regard for your courage. Humanitarianism that will dis-

rupt and dishonor the medical profession would be a misnomer. Your attitude is a repetition of the fallacy that medical men are either supermen or angels, which to those who know them intimately is absurd.

The fact that the English medical profession failed to hold together, does not mean that that would hold true here. They had very little to lose in any form of practice. The English were largely members of lodges throughout the whole country, and there was slight difference between the old and the new systems. The Massachusetts physician has a great deal more at stake and would be far more willing to fight for his rights. It is ridiculous that a highly specialized and compact service such as medicine is to have to surrender except under terms of their own making. There is no need of putting themselves in the position of beggars to take what may be given them, and the attitude of the health insurance issue is that we must consider everything and everybody before we think of our own welfare. It is inconceivable that this bill will ever be known as a doctors' bill in that it will give proper consideration to physicians. There never has been such a bill and there never will be one, and it is our own fault. If it becomes a law it will surely carry with it much less income to the medical profession at a time when the profession needs a larger income.

It is inconceivable that this act will bring as good service to the people. If this be true, it would be difficult to see humanitarianism in any direction. The safety of the people and the safety of the profession demand that no such bill ever become a law. Under any circumstances, it seems to me, that your position would warrant your safeguarding the interests of the medical profession above all else. There will be plenty of others to take care of the other interests concerned.

Very truly yours,

THOMAS F. GUNNING, M.D.

INDUSTRIAL HEALTH INSURANCE.

Shelburne Falls, Mass., Dec. 22, 1916.

Mr. Editor:

I have been following your editorials on Industrial Health Insurance with much interest. Apparently you are constituting yourself champion of *some* form of such insurance. In your official position, is that a just and proper policy until you know what the attitude of the profession, whom you are supposed to represent is toward it? Would it not be more fair to take a vote on the subject and then take your stand accordingly?

In this section, at least, the great majority of the profession are strongly against it. The benefits to be obtained by such legislation are problematical, to say the least, for any of the parties concerned and the measure is worthy of serious consideration before being accepted as certain to accrue to *anyone's* benefit except the insurance companies.

I do not wish to discuss the matter at length, but will point to one thing alone. Do we wish for a socialistic state and nation or an individualistic one as we always have been? And, if socialistic, why single out one class to experiment on? Why not let all share alike in the benefits and ills of the Socialists' paradise?

If this measure is to be forced upon us, Mr. Editor, I agree with you that the profession must look after its own interests in the shaping of the bill; but, if the profession is against the measure, let us first try to beat it *in toto*. Give us a vote and see where we stand and then let us have concerted action.

Very sincerely yours,

CHARLES L. UPTON, M.D.
Univ. of Penn., '96.

SOUND ADVICE FROM A FORMER GENERATION.*

* The following letter, a copy of which was sent us by a correspondent, deserves publication for its sound advice from a famous surgeon of a former generation.—Editor.]

Mr. Davis Thacher Lewis,
Castleton, New York.,

My dear Sir,

I am truly happy to hear from your good father that you are proceeding with studyings in the science of anatomical knowledge, which is the foundation of our science, without which you will have no confidence in yourself or the public have any in you.

In obtaining a knowledge of anatomy a system of study is required or its impression will soon fade in your memory, for you may dissect the muscles of an arm, and forget them in a year, or remember them for life, according to the view you take of the subject. For example, ask yourself which are the seven muscles which arise from the scapula and are inserted into the os humeri? What the four muscles which bend and straighten the forearm? Which the four which roll the radius, to which you may add the biceps? What the three flexors and three extensors of the hand; the three flexors and three extensors of the thumb; the abductor and adductor; the extensor of the forefinger, and its abductor? The muscles which separate the fingers and bring them together? Lastly, the muscles of the palm of the hand?

Dissect and recall them in this way and you will acquire anatomy and physiology so as not to forget what you have once acquired. You are in a country which opens a wide field for science and for practice, in which you have not to contend with numbers, unlike us, being three in a bed; but you have plenty of room to make your way without jostling against other doctors. You will have no excuse for want of success, which is said to be the result of knowledge, character, industry and giving no offence.

"If hindrances obstruct your way,

Your magnanimity display,

And let your strength be seen.

But, oh! if fortune fills your sail

With more than a promising gale,

Take half your canvas in."

Be candid and kind to your medical brethren, and never blazon their faults, but conceal them. Speak little, think much; do not write until you have something important to communicate, but recollect the proverb, "O that my enemy would write a book!"

Never write upon any subject which you cannot demonstrate.

With very good wishes, believe me yours truly,
London, March, 1836. ASHLEY COOPER.



CHANGES IN THE MEDICAL CORPS, U. S. NAVY.

October 30.

P. A. Surgeon P. R. Stainaker, detached *Columbia* to waiting orders.

P. A. Surgeon O. J. Mink, to *Columbia*.

October 31.

Surgeon R. W. Plummer, detached *Alabama* to *North Dakota*, additional duty on *Alabama*.

P. A. Surgeon C. H. Dragoo, detached Naval Hospital, Newport, R. I., to Naval Training Station, Newport, R. I.

November 6.

P. A. Surgeon G. W. Shepard, detached Norfolk Receiving Ship, to Training Station, at St. Helena, Va.

P. A. Surgeon H. A. May, to Naval Hospital, Annapolis, Md.

November 7.

P. A. Surgeon N. T. McLean, to Washington, D. C., for promotion.

Asst. Surgeon W. S. Wentzel, resignation accepted, to take effect November 8, 1916.

Asst. Surgeon W. W. Wickersham, detached *Prairie* to Maine Expeditionary Forces, Santo Domingo, D. R.

P. A. Surgeon A. B. Clifford, detached *Washington* to *Virginia*.

Asst. Surgeon H. A. Tribou, detached *Virginia* to *Tacoma*.

Surgeon G. F. Freeman, to Naval Hospital, Boston, Mass.

P. A. Surgeon R. F. Sheehan, detached Naval Medical School to *Culgoa*.

P. A. Surgeon W. G. Farwell, detached *Culgoa* to wait orders.

P. A. Surgeon J. G. Ziegler, detached Coast Torpedo Force, Pacific Fleet, to *Chattanooga*.

Surgeon R. B. Henry, to Naval Training Station, Norfolk, Va.

P. A. Surgeon M. Donelson, detached Receiving Ship, at Norfolk, Va., to *Pennsylvania*.

November 15.

Surgeon M. H. Abes, detached *Salem* to *Maine*.

P. A. Surgeon F. L. Porter, detached *San Francisco*, to Washington, D. C., to wait orders.

P. A. Surgeon F. E. Porter, detached *San Francisco* to wait orders.

P. A. Surgeon G. C. Rhoades, detached Naval Hospital, Norfolk, Va., to *San Francisco*.

November 16.

P. A. Surgeon M. H. Ames, detached *Salem* to *Maine*.

P. A. Surgeon R. B. Henry, to Training Station, Norfolk, Va.

P. A. Surgeon W. N. McDonell, detached *Pennsylvania* to *Montana*.

P. A. Surgeon M. Donelson, detached Receiving Ship at Norfolk, to *Pennsylvania*.

November 17.

Asst. Surgeon W. B. Hetfield, detached *Monocacy* to Olongapo, P. I.

Asst. Surgeon C. S. O'Brien, detached Canacao Hospital to *Villalobos*.

Asst. Surgeon H. V. Cornett, detached *Villalobos* to Canacao Hospital.

Asst. Surgeon S. M. Taylor, detached Olongapo Hospital to *Monocacy*.

Asst. Surgeon G. W. Calver, detached *Brooklyn* to Yokohama Hospital for treatment.

November 21.

Surgeon G. F. Freeman, to Navy Yard, Boston, Mass.

Asst. Surgeon R. L. Crawford, detached *Rhode Island* to *Smith*.

November 22.

P. A. Surgeon W. J. Findeisen, detached Navy Recruiting Station, Detroit, Mich., to Naval Training Station, Newport, R. I., December 8.

November 24.

P. A. Surgeon P. R. Stainaker, to Training Station, Newport, R. I.

P. A. Surgeon G. E. Robertson, detached *Memphis* to *Arkansas*.

Asst. Surgeon C. H. Weaver, detached *Arkansas* to *Paduach*.

December 2.

Asst. Surgeon L. B. Wiggs, to Naval Recruiting Station, Columbia, S.C., December 11.

Asst. Surgeon O. C. Foote, detached *Delaware* to *Sterett*.

Surgeon F. E. McCullough, detached *Florida* to *Oklahoma*.

P. A. Surgeon C. H. Dragoo, detached Naval Training Station, Newport, R. I., to Navy Recruiting Station, Detroit, Michigan, December 2.

December 4.

Surgeon M. K. Johnson, detached *Oklahoma* to home and wait orders.

Commissioned Assistant Surgeons M. R. C., from November 7: K. E. Lowman, E. J. Stein, E. E. Koebbe, L. H. Clerf, E. C. Carr, E. A. Brown, J. H. Durrett, A. C. Smith, M. T. Clement.

Commissioned Assistant Surgeons from November 4: S. P. Taylor, Jr., A. Robinson.

Asst. Surgeon A. J. Sullivan, commissioned from October 7, 1916.

December 6.

Surgeon R. B. Williams, Marine Expeditionary Force, Haiti, to *Florida*.

December 8.

P. A. Surgeon W. J. Zalesky, detached Naval Recruiting Station, Brooklyn, to New York Hospital.

P. A. Surgeon T. W. Raison, detached Naval Hospital, Great Lakes, to Marine Expeditionary Force, Santo Domingo.

P. A. Surgeon H. F. Lawrence, detached Naval Hospital, New York, to Marine Expeditionary Forces, Santo Domingo.

P. A. Surgeon D. H. Casto, detached Marine Brigade, Port au Prince, Haiti, to wait orders.

P. A. Surgeon W. G. Farwell, to Navy Recruiting Station, Brooklyn, N. Y.

Asst. Surgeon A. C. Smith, to Naval Hospital, New York.

Asst. Surgeon L. N. Clerf, to Naval Hospital, Great Lakes, Ill.

Asst. Surgeon M. T. Clement, to Marine Barracks, Port Royal, S. C.

December 9.

P. A. Surgeon F. E. Sellers, detached *Kearsarge* to *Panther*.

P. A. Surgeon N. T. McLean, to Sanitary Engineer, Haiti.

P. A. Surgeon Sankey Bacon, detached *Panther* to wait orders.

P. A. Surgeon F. E. Porter, to Navy Recruiting Station, Portland, Me.

P. A. Surgeon J. B. Pollard, detached Naval Academy, Annapolis, Md., to Naval Hospital, Norfolk, Va.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION, FOR THE QUARTER ENDING NOVEMBER 30, 1916.

CONTRIBUTIONS.

Dr. Edward E. Mayer, Pittsburgh, Pa.	\$ 10.00
Dr. W. C. Cahall, Philadelphia, Pa.	1.40

(3d contribution)

Receipts for the quarter ending Nov. 30	\$ 11.40
Previously reported receipts	\$7,946.86

Total receipts	\$7,958.26
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PREVIOUSLY REPORTED DISBURSEMENTS

1625 Standard Boxes of Food, at \$2.20	\$3,575.00
1274 Standard Boxes of Food, at 2.30	2,930.20
353 Standard Boxes of Food, at 2.28	804.84

Total disbursements	\$7,310.04
Balance	\$ 648.22

F. F. SIMPSON, M.D., *Treasurer*.

7048 Jenkins Arcade Bldg., Pittsburgh, Pa.

NOTICE.

BOSTON CITY HOSPITAL OPERATIVE CLINICS.—In addition to the Saturday general operating day for all surgical services already announced, there will also be, until further notice, operative clinics of individual services as follows:

Tuesdays, 9 A.M. Dr. Lothrop.

Thursdays, 10 A.M., Drs. Thorndike, Blake, Cotton and Faulkner.

Fridays, 10 A.M., Drs. Lund, Hubbard and Cunningham.

These operative clinics will be held in the surgical amphitheatre.

On Fridays, 10 A.M., in special operating room, Drs. Nichols, Scannell and Howe.

SOCIETY NOTICES.

HAMPSHIRE DISTRICT MEDICAL SOCIETY.—The regular meeting of the Hampshire District Medical Society will be held at Boyden's, Northampton, January 10, at 11.30 A.M. Papers: Vincent's Angina, Dr. W. J. Collins; Mouth Infections in their Relation to Systemic Diseases, Dr. P. A. Hudnut. Luncheon at 1 P.M.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Meeting for medical improvement at United States Hotel, Boston, Thursday, Jan. 4, 1917 at 11.30 A.M. Reader: Frederick T. Lord, M.D., of Boston. Subject: Pneumonia. For E. H. Bushnell, M.D., of Quincy.

F. H. MERRIAM, M.D., *Secretary*,
South Braintree, Mass.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS.—There has been considerable discussion regarding the Workmen's Compensation Act as it applies to physicians and workers. This Society will hold a meeting at the Copley-Plaza Hotel on Jan. 8, 1917, which will be addressed by I. M. Rubinow, M.D., Secretary, Council Health and Public Instruction, A. M. A.; Frank Dresser, Manufacturers' Association; Frank P. Meade, American Federation of Labor.

As many of the Council of the Massachusetts Medical Society have expressed their desire to be present, an invitation is extended to all the members of the Council of the Massachusetts Medical Society.

J. H. STEVENS, M.D., *Secretary*.

THE MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.—The next meeting will be held at the Hotel Brunswick on Thursday, January 11, 1916. The managers will meet at 7.30 P.M. Dr. Robert M. Green, Editor of the BOSTON MEDICAL AND SURGICAL JOURNAL, will address the Society on The Mechanical Treatment of Abdominal Ptosis and Associated Postural Defects. Members of the medical profession invited. Please be prompt and thus show your appreciation.

DOUGLAS GRAHAM, M.D., *President*,
MRS. MABEL F. WALKER, *Secretary*.

APPOINTMENT.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.—Dr. Roy G. Hoskins has been appointed associate professor of physiology.

RECENT DEATH.

DR. PAUL VON BRUNS, who died recently in Germany, was born on July 2, 1846. After serving throughout the Franco-Prussian War, he studied medicine, and in 1875 he became privatdozent at the University of Tübingen. In 1877 he was appointed professor extraordinary of surgery, and in 1882 full professor and director of the surgical clinic at Tübingen, succeeding his father, Dr. Victor von Bruns, in this position. In 1883 he founded the *Beiträge zur Klinischen Chirurgie*, which he edited until his death. He was the author of many papers on laryngeal surgery, on gunshot wounds, surgery of goitre and of umbilical hernia, the treatment of fractures of the lower extremity, acute osteomyelitis, and the use of antiseptics.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

January 11, 1917

ADDRESS

- THE PUBLIC HEALTH ASPECTS OF LEPROSY. *By George W. McCoy, M.D., Washington, D.C.*..... 43

ORIGINAL ARTICLES

- SOME EXPERIENCE BEARING ON THE MEDICO-LEGAL VALUE OF THE PRECIPITIN TEST FOR HUMAN BLOOD. *By Ernest L. Hunt, M.D., and Ora M. Mills, Worcester, Mass.*..... 48
- FIBROMA OF MEDIASTINUM: REPORT OF A CASE. *By S. J. Shen, M.D., Boston.*..... 53
- FUNDAMENTAL CONSIDERATIONS IN THE TREATMENT OF THE PSYCHODERMOSES. *By Donald Gregg, M.D., Wellesley, Mass.*..... 57
- DIAETES MELLITUS AND SYPHILIS. *By Joseph H. Barach, M.D., Pittsburgh.*..... 58
- OBLITERATION OF LIVER DULNESS IN ACUTE PERFORATION OF THE STOMACH AND DUODENUM, WITH CASE REPORTS. *By Martin T. Field, M.D., Salem, Mass.*..... 60
- A STUDY OF THE X-RAYS OF CASES OF FRACTURE OF THE LONG BONES AT THE MASSACHUSETTS GENERAL HOSPITAL. *By Russell F. Sheldon, M.D., Boston.*..... 61

- HARVARD INFANTILE PARALYSIS COMMISSION
THE HARVARD INFANTILE PARALYSIS COMMISSION AND ITS WORK IN MASSACHUSETTS. *By Robert W. Lovett, M.D., Boston.*..... 62

CLINICAL DEPARTMENT

- A REPORT OF AN UNUSUAL CASE OF UMBILICAL HERNIA. *By John W. Lane, M.D., Boston.*..... 64
- RINGWORM OF THE SCALP AND ALOPECICIA AREATA APPEARING SIMULTANEOUSLY IN THE SAME LOCATION. *By John E. Lane, M.D., New Haven, Conn.*..... 65

BOOK REVIEWS

- The Essentials of Chemical Physiology. *By W. D. Halliburton, M.D.*..... 66
- Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes. *By Charles A. Elsberg, M.D.*..... 66

EDITORIALS

- WORK OF THE HARVARD INFANTILE PARALYSIS COMMISSION..... 67
- A TRILOGY OF HEALTH REPORTS..... 68
- MEDICAL NOTES..... 70

OBITUARY

- FRANCIS J. KEANY, M.D..... 74

CORRESPONDENCE

- AMMONIUM SALICYLATE IN POLIOMYELITIS. *Beverly Robinson, M.D.*..... 75
- A RULING OF THE STATE BOARD OF REGISTRATION. *Charles Malone, M.D.*..... 75
- AN UNUSUAL CASE. *J. T. Bowler, M.D.*..... 75
- INDUSTRIAL ACCIDENT BOARD RULING. *Frank J. Donahue.*..... 76

MISCELLANY

- BOSTON CITY HOSPITAL. MEMORIAL RESOLUTIONS FOR DR. KEANY. 74
- NOTICES, APPOINTMENTS, RECENT DEATHS, ETC..... 76

Address.

THE PUBLIC HEALTH ASPECTS OF LEPROSY.*

By GEORGE W. MCCOY, M.D., WASHINGTON, D.C.,

Formerly Director, U. S. Leprosy Investigation Station, Hawaii.

HISTORICAL.

I SHALL not occupy your time with a discussion of the historical features of this ancient disease beyond reviewing briefly three conspicuous examples of its spread in modern times.

The history of leprosy in the Memel district of East Prussia is rather interesting. The first case was observed in 1848, the infection having been introduced from the Baltic provinces of Russia, where the disease has long been endemic. During the next 60 years 78 cases developed, the epidemic, if you wish so to designate it, reaching its maximum in the early nineties, when about 25 cases existed. Since then the number has declined steadily in this region.

In the Scandinavian Peninsula the history of the disease goes back about a century. In 1856 nearly three thousand cases were known. Measures, which are usually spoken of as being very thorough, were taken to suppress it, and at present the total number of lepers is perhaps under 200.

The history of leprosy in Hawaii is of great interest. It seems to be well established that the first cases were observed about 1850. In 1863 the health authorities took cognizance of

it and in the following year definite steps were taken to establish a leper settlement. The disease spread rapidly among the natives, and within a few years had reached alarming proportions. The measures taken were in general intelligently directed and fairly well carried out, and they have been in operation ever since.

The number of new cases of leprosy reported each year has fluctuated considerably, being as high as 558 in 1888 and as low as 23 in 1908. At present, the number is about 50 annually. The total number in segregation remained above 1000 from 1888 to 1899, the highest figure being in 1890, when there were 1213 lepers in isolation. At present the number is approximately 700. The disease has remained chiefly among the people of native blood.

OUR KNOWLEDGE OF THE TRANSMISSION OF LEPROSY.

Unfortunately, our knowledge of this division of our subject is not sufficient to enable us to take such precise and definitely effective measures as we are able to take in connection with some other infectious diseases, for example, plague, yellow fever and malaria. We are confronted at the outset by the fact that the disease is one which we cannot communicate experimentally to animals nor, indeed, for that matter, to man. Perhaps this assertion deserves some elaboration, in view of certain claims that have been made by various investigators in recent years. All of the reports of successful animal inoculation of leprosy, prior to about seven years ago, have remained unverified, and may be ignored. The newer work requires special

* The Cutter Lecture on Preventive Medicine, April 3, 1916.

consideration. Claim has been made that the disease has been reproduced by the inoculation of *leprous tissue* into the Japanese dancing mouse and other laboratory animals. It appears that one's interpretation of these cases depends largely upon the view one takes of the histological appearances produced and what constitutes leprosy in animals.

No reasonable claim is advanced that the condition follows the course of the disease in man, or even simulates it at all closely. There are no good grounds for believing that the lesions produced are dependent upon the introduction of living organisms.

A much larger number of successful inoculations of laboratory animals with *cultures* of organisms grown from leprous tissue has been reported. None of them is convincing, and the experience of my colleagues and myself in Hawaii with the inoculation of dozens of monkeys and hundreds of lower laboratory animals, both with leprous tissue and with cultures, has convinced me that the disease has never been reproduced in the lower animals. The pitfalls in this work are very numerous, and many investigators have fallen into them; the chief ones are the confusion with lesions due to the tubercle bacillus, and the production of lesions due to organisms acting merely as foreign bodies remaining in tissues.

We naturally feel that it is not particularly surprising that animals so far removed from man, as even the higher apes should give negative results, and that if man could be used for inoculation purposes, probably the results would be different. We find, however, that a number of experiments have been made on man and that, with one doubtful exception, all have been negative.

Arning's famous experiment is generally regarded as invalid on account of the ample opportunities for infection the subject had under natural conditions prior to inoculation.

This is perhaps as good a place as any to mention the leprosy-like disease of rats, which has been studied by various workers during the past ten years. Rat leprosy certainly simulates the disease in man very closely and is caused by an organism that is closely related to the Hansen bacillus. It is equally certain that the disease in man is not due to that in rats or *vice versa*. The distribution of the rat disease has not been studied fully, but it is known to be absent from notorious leprosy foci and to be present where leprosy is unknown.

Notwithstanding the absence of strictly accurate and scientific information concerning the transmission of the disease, there are certain facts that we may consider as well established and which have a bearing upon the sanitarian's problem in dealing with leprosy.

Heredity. Possibly the idea of heredity had its inception with the curse pronounced on Gehazi by Elisha when he said, "The leprosy,

therefore, of Namaan shall cleave unto thee and unto thy seed forever," or when David cursed the house of Joab, saying "let there not fail from the house of Joab one that is a leper." Certain it is that until comparatively recent years the disease was very generally regarded as transmissible from parent to offspring.

Without going into a discussion of the fundamental biologic considerations of heredity, we may say that leprosy is never or almost never inherited in the same manner as is syphilis, for example. The experience everywhere is that if children are taken away from leprosy parents soon after birth and reared in a clean environment, the danger of their developing the disease is almost nil. In Hawaii, there is only one example in which infection occurred under these circumstances.

Insect transmission. This theory is a very attractive and popular one, and that is about all that is to be said for it. There is no evidence whatever to support it. So far as concerns blood-sucking insects, a strong obstacle to the acceptance of the theory is found in the fact that ordinarily the acid-fast bacilli of leprosy cannot be found in insects that have fed on leprous nodules. That the bacilli may occur on flies and on other non-blood-suckers is established, but that they are instrumental in the transmission of the disease is very doubtful.

Without discussing other ways in which leprosy may possibly be transmitted, but which are not supported by any strong evidence, we may say that association with lepers does sometimes result in infection. Generally the statement is made that prolonged and intimate contact is necessary for the conveyance of the disease. This is not an invariable rule. It is not uncommon in endemic foci to have cases in which there is no history of contact with a leper. I have seen more than one person who had the disease who had no knowledge of ever having seen a leper. I have in mind one conspicuous example of the fallacy of prolonged and intimate association. This was the case of a very intelligent, well educated Caucasian, who came from the best stratum of society. This person had lived in an endemic leprosy focus for many years, but had never been, so far as it was possible to ascertain, in even slight contact with a leper. Several Americans have developed leprosy after having sojourned in our tropical possessions, yet without, so far as they knew, ever having been in contact with a leper. So let me repeat, prolonged and intimate contact certainly is not always necessary for infection. Perhaps the most discouraging feature in tracing the source of infection in most cases is the fact that the incubation period is so long. Like most other things about leprosy, exact data on this point are wanting, but we know that the period between infection and the development of symptoms is rarely under two years, often much longer. I have seen a case in which over

six years intervened between the last possible contact with a leper and the onset of symptoms.

The disease progresses very slowly in the great majority of cases. Ordinarily a leper will not change very much in a year. Cases have been watched over long periods—five years or more—without any material change occurring or the disease making any appreciable progress.

In considering this portion of our subject, I should like to call attention to two facts which any satisfactory theory of the transmission of the disease should explain. (1.) We find that the disease spreads readily enough in one place and not in another. (2.) The incidence of the disease is higher among men than among women. Practically everywhere the number of males afflicted is about 50 per cent. higher than the number of females. These are two of the striking facts about leprosy for which we have no satisfactory explanation.

Often the statement is made that hospital attendants and physicians never contract leprosy. This is by no means true. There are at least three examples of infection at the Molokai Settlement of those who have ministered to lepers. One of these is the famous case of Father Damien. In another the diagnosis was made by Dr. Brinckerhoff, and in the third case the diagnosis was made by Dr. Goodhue, Medical Superintendent of the Molokai Settlement, and myself. There are several additional cases at other lazarettos which need not concern us here.

GEOGRAPHY OF LEPROSY.

I want to emphasize at the beginning of this part of my remarks that where leprosy occurs and where it spreads may be very different. Therefore, we may speak of endemic foci and non-infectable foci. Under the first head we include practically all places in which the disease occurs with the exception of the British Islands, almost all of France and the greater part of Germany and Austria and the greater part of the United States and Canada. The fact that in the most highly cultured parts of Europe and in all of our own country, excepting the Gulf region, the disease shows no pronounced tendency to spread, is naturally a most important one. It means that from a purely public health standpoint we need concern ourselves but little with cases found in these regions.

We are not prepared to say that the immunity of these regions is as absolute, as, for example, is the immunity of certain regions to malaria and yellow fever through the absence of particular species of mosquitoes; but certainly there is abundant evidence that there is practically no risk of transmission in these localities. Thus, in comparatively recent years there have been a few apparently well authenticated examples of infection in southeastern France, and a single case in Ireland,—the well-known one reported by Dr. Hawtrey Benson.

There has been a case or two in German territory adjacent to France. In France some concern has recently been felt and certain measures have been recommended,—reporting, surveillance, hospitalization of pauper cases, and exclusion from schools. The distribution of endemic foci is one of the most puzzling and interesting facts in connection with the disease. We know, for example, that all, or practically all, of the lepers in New England and New York are imported cases. In spite of the fact that there have been ample opportunities for people to acquire the infection from association with these imported cases, no spread of the disease has occurred. In Minnesota, where a considerable number of lepers have come in from Scandinavia (perhaps not far from one hundred) there have been few cases developed (not exceeding half a dozen) among persons born in America. On the contrary, in Louisiana the cases are practically all of domestic origin and, I believe, that some of the lepers found in Florida and Texas come under the same head. On the Pacific Coast, where there has been a small though steady influx of lepers, or persons incubating this disease, from the Orient, during half a century there have been, so far as I have been able to determine, but two cases of infection arising from these. At the San Francisco pest house, where there are always about 20 lepers, all are of foreign origin. Those of us who live in the favored parts of the United States must not flatter ourselves that our immunity is one of the compensations for our rather rigorous climate, for we know that Iceland has been an endemic focus of the disease for a century or more, and on this continent New Brunswick has been a famous focus of leprosy for fully as long. The most common explanation given for this immunity of certain localities is that their sanitary conditions are better. I believe that this explanation is not sufficient. One would have some trouble in convincing me that the sanitary conditions under which Orientals and other immigrants live in our great cities are less favorable to the spread of the disease than those under which people in, for example, Louisiana or Hawaii, live.

This peculiarity in the distribution of leprosy is not, I feel sure, a racial matter. For example, we have found that in the Hawaiian Islands, when maximum opportunities for infection occur, that is clean persons living in close association with lepers, there is about as large a percentage of infection among Caucasians as among Hawaiians. While our figures do not cover a large enough number of persons to be of great value, they do not lend support to the theory of racial susceptibility or predisposition.

It is only fair to say that some students of the leprosy problem are of the opinion that the apparent security of communities in which the disease shows no tendency to spread is not to be relied upon. They hold that there is evi-

dence that the disease may, after a period of latency, become established in such a locality and spread in an alarming manner. The evidence that this needs to be considered seriously does not appear convincing to me.

I have not gone into the world distribution of the disease in detail. It may be sufficient to say that practically every country has its quota of lepers, the great majority being, of course, in the tropics, but with a very considerable number in temperate and arctic climates.

TYPES OF DISEASE AND LESIONS.

It is customary to divide leprosy into three types from a clinical point of view. There are first, the nodular or tubercular type (the former term is to be preferred, as it frees us from any possibility of confusion with lesions due to the tubercle bacillus); second, the anaesthetic or nerve type; and third, the mixed type in which there is a combination of the symptoms of the two other types. It is sometimes difficult to determine under which type to classify a particular case, and often the manifestations of cases change while they are under observation, so that a revision of the type diagnosis becomes necessary. From a public health standpoint the determination of the types of the disease is to my mind most important. We have reasonably satisfactory grounds for believing that the acid-fast bacillus found in leprosy lesions is the cause of the disease. It follows that unless the bacilli can pass from a leper to another person there is no opportunity for the disease to be communicated. In a considerable proportion of the anaesthetic cases, the only leprosy organisms the patient has are found in the deeper structures, particularly the nerve trunks. Some of these cases never discharge Hansen's bacilli, and a number go for very long periods without developing external bacillus-carrying lesions. We find that nearly all students of the subject agree that pure anaesthetic cases are not a menace to those around them even in endemic foci. Individuals who have no manifestations beyond shrunken and deformed fingers and hands or anaesthetic patches or some combination of these signs of nerve lesions, are almost certainly of no importance from a sanitary point of view.

The next point I want to consider is the matter of "open lesions." We find, running through the literature, statements asserting or implying that the great danger in leprosy is in open lesions through which bacilli are supposed to reach the outer world in great numbers and thereby contribute to the spread of the disease. We will agree that lesions from which bacilli are being discharged probably are sources of infection, but what is often lost sight of is the fact that many open lesions—the majority, I believe—do not discharge leprosy bacilli. A very common form of ulceration in nerve leprosy is that of a trophic nature and occur-

ring at points subject to pressure or friction. The organisms of leprosy are almost never found in such lesions. This fallacy of the "open lesion" has found its way into certain laws and regulations, thus the leper act of India (1898) defines a leper as "any person suffering from any variety of leprosy in whom the process of ulceration has commenced," and I dwell upon it here to emphasize the fact that, without qualification, it is a very unsafe criterion of the probable infectiveness of a leper.

DIAGNOSIS.

From what I have said, you will be prepared for the view that unless the organism which we regard as the cause of leprosy can be demonstrated microscopically, the case, from a sanitary point of view, need not concern us seriously.

The number of stained preparations that need to be made varies. Ordinarily Hansen's bacillus can be demonstrated in the first smear stained; occasionally several must be made, and I have on one occasion made eight before finding the organisms. When bacilli are scanty, they may be overlooked at one examination and found at a subsequent one.

The finding of the bacilli in smears from the nasal mucus or from scrapings from the nasal mucosa has been the subject of much discussion. Usually the bacilli are to be found in this locality when they can be demonstrated elsewhere, but ordinarily they are not to be found early in the course of the malady. In older cases, the nasal cavities usually show the organism. Much more care is required in drawing conclusions from the presence of acid-fast organisms from the nasal cavities than from skin lesions, as acid-fasts are found in this locality in a considerable percentage of healthy persons. In such cases, however, the organisms are not found in the characteristic groups in which they occur in leprosy; they are less numerous and usually more plump than the leprosy bacillus.

There is one point in connection with the clinical diagnosis to which I wish particularly to call your attention. I refer to enlargement of nerve trunks. One often meets with rather loose statements about "enlarged" or "palpable" nerve trunks. I think that Hansen judged this matter correctly when he said that unless one could detect distinct spindle-shaped thickening or beading on a nerve trunk it was better to regard it as normal.

Biological reactions in lepers are not of great value in diagnosis. A large proportion give the Wassermann with the usual antigen used in syphilitic work. This appears to be independent of syphilitic infection. Complement binding occurs also when tuberculin is used as an antigen as well as when extracts of other acid-fasts are used, and we also find it when leprosy tissue furnishes the antigen. A goodly proportion

give the various tuberculin reactions, but the luetin reaction appears to be absent ordinarily.

PROGNOSIS.

A pathologist with large experience with leprosy once remarked that one could never be sure that a case of leprosy was cured unless one had a complete post-mortem examination to determine the point. This is doubtless correct from the bacteriologist's point of view, but we must deal with this question in reference to the living. There can be no doubt that a small proportion of lepers recover, so far as recovery can be determined by the most careful examination that it is possible to make. I have had occasion to participate in the discharge of approximately 40 persons from the isolation colony of Hawaii. The late Dr. Brinckerhoff designated apparently recovered cases as "social cures"; that is, persons who had improved to such an extent as no longer to have demonstrable acid-fast bacilli; cases that probably were not a menace to those around them.

TREATMENT.

This has only an indirect bearing on the public health problem of leprosy, but it is a matter of sufficient importance to justify a few words. The first question usually asked is in regard to serums and vaccines. The results have been negative. Medicinal agents chiefly used are chaulmoogra oil and strychnine. Some cases appear to be benefited by these. Locally, caustics are often helpful. The use, by dermatologists, of refrigeration by the application of carbon-dioxide snow in certain skin diseases has been extended to leprosy with good results. The improvement seen in many patients when put under the favorable conditions of the isolation station in Hawaii is remarkable. It may be a surprise to you to know that there is a large field of usefulness for surgical procedures in leprosy. Disfiguring nodules may be excised, necrosed bones removed, necrotic extremities amputated and—perhaps most important—by means of tracheotomy permanent relief may be given for the laryngeal stenosis that is so common among the unfortunates.

The surgical work being done by Dr. W. J. Goodhue, at Molokai, and Dr. H. T. Hollman, of the Public Health Service, at Honolulu, is among the most useful that can fall to the lot of a medical man.

SANITARY CONTROL.

This brings us to the subject of segregation. Not every leper requires isolation. When this is required, one probably had best always insist on institutional care. Home segregation—much practised in Norway, but not approved of by the Scandinavian leprologists—is a poor makeshift.

The Danish law which prevails in Iceland

requires that the leper shall sleep alone, have separate cooking and eating utensils, and that these, together with his bedding and wardrobe, shall be washed separately. He is not permitted to care for children, to cook for nor to serve non-lepers, and he shall not make nor receive unnecessary visits. In exceptional cases, where the precautionary measures outlined are not carried out, or when the physician thinks the circumstances warrant, the patient may be isolated in a hospital for lepers.

I need hardly say that isolation need not be absolute nor rigorous. The practice in Hawaii is probably as good as can be carried out. Relatives are allowed to come into the settlement there, but not to mingle intimately with the patients. Such family life as is practicable may be permitted. Children of leper parents should be removed at once to clean surroundings.

The question of the location of a leper colony must usually be decided on grounds other than those purely sanitary. If practicable, it would be better to locate it near a large center on account of the ease and the economy of administration. I have often thought that it might have been better had the Hawaiian authorities established colonies on all of the islands rather than to concentrate all of the lepers at Molokai. It seems reasonable that cases could then be removed from home surroundings earlier than is possible at present. On the other hand, there are advantages in a complete physical severance of the ties that bind persons to the home environment.

The question of requiring patients to work for the purpose of contributing to their own maintenance comes up in connection with institutional care of lepers. At Molokai no work is required, but if patients want to work they are paid for such as may be assigned to them.

So far as I know, segregation has never had an entirely fair test anywhere. It is impracticable to get cases early enough and to get a large enough proportion to give a community the full benefit of isolation. Unintentional or wilful concealment keeps many from coming under the control of the sanitary authorities until the disease has been in existence for several years. Even such partial measures as it is possible for a community to take appear in the light of experience to be valuable, but if all the lepers could be gotten early we have reason for believing that results equally brilliant would be obtained, as have been secured with certain other infectious diseases. Some of the difficulties encountered in the attempt to enforce segregation in endemic foci may be emphasized when I say that they might be compared with those that may be imagined if in any American community we attempted to segregate all cases of tuberculosis.

The present status of leprosy in the United States is worth a brief reference. The import-

ant endemic foci are confined to the Gulf coast, Louisiana furnishing by far the largest part.

The number of lepers in the country known and reported by health officers is under 150. The true number probably is double this at least. To show how chaotic is our information on this point, I may say that at a recent hearing before a Senate committee in Washington the estimates of the number of lepers in the United States varied from 150 to 2400.

Original Articles.

SOME EXPERIENCE BEARING ON THE MEDICO-LEGAL VALUE OF THE PRE- CIPITIN TEST FOR HUMAN BLOOD.*

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FOREWORD.

FOURTEEN years ago† Professor Edward S. Wood, of honored memory, read a paper before this Society entitled "The Serum Test for Human Blood," in which he described the so-called precipitin test of Uhlenhuth, and states: "By our old methods (without this recent test) we were able to testify that a certain blood-stain gave results on measuring the red blood cells obtained from the stain, which showed that the blood-stain was consistent with its having been made by human blood, and, further than that I do not know that any expert has ever testified. But now if we obtain a positive result by this serum test, we can say that the stain contains human blood serum, and does not contain that of any other animal except some species of monkey."

The conclusion Dr. Wood then announced became the accepted view as to the value and reliability of the test throughout this community, both among physicians and officers of the law, with the additional inference, supported by certain of our text-book writers, that the age of the stain did not materially increase the difficulties or detract from the reliability of the reaction.

This paper is based on:

1. An experience entailing a disappointment.
2. A series of laboratory efforts to explain or supplement the experience.

* Read, in slightly different form, before the Massachusetts Medico-Legal Society, February 2, 1916.

† February 4, 1902.

THE EXPERIENCE.

My* particular interest in this test was aroused by an important murder case which occurred in our district, and for which a young man was tried by the Superior Criminal Court, at Worcester, Mass. The story of the case is briefly this: The victim was a peddler of dry goods and furnishings, who drove a cart through some of the mill towns in the southern part of the 11th Worcester District. About 11.30 p.m. on a certain date, the night officer in A—— met the team jogging slowly toward A—— from the direction of B——. Not receiving an answer to his salutation, he investigated, and found the body of the owner, head down, in front of the seat, legs up over the seat, wrapped in blankets, and having a wound in the front of the chest. The autopsy showed that he had been shot from behind with a shotgun, at close range. His hat was trampled with hay, chaff and manure, and the trail of the wagon in the snow led to the mill hamlet of C——, seven miles south, where the victim had been and where his movements were traced up to 8.30 p.m. Next day there were found in the stable where he customarily put up, especially in the stall opposite the one his horse usually occupied, and scattered about the floor adjacent, many blood stains, mostly matted with straw, bran or chaff, and some also on the middle plank of the stall floor. These were variously explained as due to the killing of fowl, the slaughter of pigs (usually done in the adjoining wash-room), and by the discharges of a bull with "black water," which had been kept in that stall two weeks previously. Most of the blood spots were moist when found. Later a gun capable of inflicting the wound was found broken, and the portions hidden in different places within the barn. Still later, the watch of the murdered man was found carefully hidden in the house, and on the same floor as the room occupied by the young man who was in charge of the stable at the time the murder must have happened, and who had the only key to the room where the gun was customarily kept, not otherwise accounted for.

By order of the District Attorney, the blood stains were turned over to Prof. William F. Whitney for identification. A few weeks later, however, Prof. Whitney advised us that he was awaiting a serum from Germany, and feared that it might not arrive because of the difficulties of communication with that country, and invited me to prepare a serum.

Accordingly I began the immunization of four healthy rabbits by the technique of Dr. Paul Uhlenhuth, as described and exemplified in his monograph, kindly loaned me by Prof. Whitney, varying only and very slightly the intervals of injection, as the exigencies of obtaining the necessary blood compelled, but adhering very closely to the optimum of 2.5 cc., intravenously, every five days for three doses, bleeding on the seventh

* E. L. H.

day, after the last dose. After a much longer period than this and by repeated injections, I finally produced an active serum (titer 1-5000) just a day before Dr. Whitney received a supply from Germany, which gave a higher titer (1-10000 feebly) but reacted less promptly and with less definiteness than mine in the lower dilutions.

Armed with these sera, Prof. Whitney and I,* carefully watched in the interests of the defence by Prof. A. W. Balch, proceeded with the tests as follows:

1. Ascertained the titers as above.
2. Ascertained the specificity against horse, beef, pig and sheep blood, 1-200 dilution, finding both negative to these species.

3. Tested solutions from dried blood stains, made with .85 saline solution, carefully centrifugated to clearness and diluted so that all gave a cloud with nitric acid, corresponding as nearly as possible to 1-1000 solution of fresh human serum, as follows:

- (a) Blood from the victim's shirt now about three months old.

- (b) Old blood stain on dress of another murder case about nine months old.

- (c) Blood clot from stable, using best specimen, found in moist state and practically free from straw.

- (d) Human blood on gauze pad, dried in laboratory six weeks.

There was absolutely no reaction in any of these tests, although both sera reacted promptly and well with fresh human serum.

Drs. Whitney and Balch reported to their respective attorneys failure to identify the blood beyond the general statement that it was of mammalian origin.

The accused was acquitted.

After the trial we secured the blood-stained plank and a scant specimen of the bloody straw, and began a further study of the method.

THE LABORATORY STUDY.

(a) *The Preparation of the Immune Sera.*

We have prepared our sera by the immunization of healthy rabbits, chiefly by the intravenous injections of fresh, sterile, human serum obtained: (1) from bloods sent to the laboratory for Wassermann tests for syphilis, (2) stripings from the placental ends of the umbilical cords in the maternity ward, drawn immediately after severing the same, (3) occasional bleedings for therapeutic purposes. The bloods aseptically drawn were allowed to clot over night, after loosening the initial early clot from the walls of the container with a platinum wire, the resulting clear serum being pipetted off. Rarely a slight admixture of corpuscles had to be separated by centrifugation, although in certain cases this was not done, as Hektoen states that by retaining corpuscular elements an anti-serum of greater value for medico-legal work is obtained; (4) hydrocele and pleuritic fluid were

made use of on occasion to supplement our supply of human serum, but proved to have less active antigenic properties.

As to the matter of dosage and intervals between injections, we find that the chief authorities agree only in a general way. With one exception, we have started the rabbits according to the method advised by Uhlenhuth, which is to inject two or three cc. into the ear veins, every 5 days for 3 doses, bleeding for trial on the seventh after the last dose, and daily for two or three days, bleeding in quantity when the trials show a valuable anti-serum. We did not follow his advice to kill the animals and take all possible blood when a satisfactory serum had developed, for the reason that we never found one to give the 1-20,000 titer, that he stipulates, so always continued the immunization, hoping to raise the value. When continued immunization seemed indicated, it was our plan to give a new series, with the doses and intervals as before, and this sometimes succeeded on the fourth, or more, trials. (See Nos. 2 and 12, second series.) Sometimes after a rest of several weeks, a resumption of injections would produce a better serum than a former series had done. (See No. 8, 2d series.)

The one exception was made in an effort to apply the rapid method of Fornet and Muller, as recommended by L. Hektoen. This rabbit (No. 11, 2d series) received by the intraperitoneal route three doses of defibrinated blood on consecutive days of 5 cc., 10 cc., and 15 cc., respectively, and was bled every other day thereafter by aspirating the ear vein for a test amount, 2 cc.; the reaction of immunity attaining its high point on the 14th day after the last dose, remaining there for about five days, then receding.

Our method of obtaining the test portions of blood by aspirating the ear vein, we have not noted in other works. It requires considerable dexterity of manipulation, but is inoffensive to the rabbit, and does not maim the ear.

We obtained the blood in quantity when the immunization had reached a satisfactory point, as indicated by the test titrations, by means of cardiac aspiration. This is well borne by the rabbit when correctly done, yields 15 to 30 cc., and has the great advantage of asepsis, and the lesser of preserving the animal for further use.

The blood so obtained is driven out of the syringe into a sterile petri dish slanted so that the clot will form at one side. When the clot has fairly formed it is placed in the ice-box, slanted in the opposite direction. Next day the clear serum is removed with a sterile pipette, titrated, tested for specificity, and, if it is to be stored, is sealed in glass ampoules, and thereafter stored in the ice-box with all light excluded, in the upright position, to allow corpuscles to settle, if any remain (Nuttall). Usually the animals are starved 24 hours before bleeding. (Uhlenhuth, rule to avoid opalescence.)

* E. L. H.

The chief difficulty encountered during the progress of the immunization was the rather frequent death of a rabbit from anaphylactic shock. The third dose by the Uhlenhuth method was usually the first to be dreaded, but we lost most after several series of injections had been administered, the symptoms being dyspnea, paralysis of the hind quarter, then forequarter, then respiratory failure, and all in a period of 5 to 10 minutes. In several instances they would rally after a period of dyspnea, or even after the paralysis of the hind quarters, and be hopping about as usual after a half hour.

Altogether we immunized fourteen rabbits, of which seven gave at some period a workable serum (i.e. 1-1000 to 1-2000), three gave sera of fairly high value (1-5000 to 1-10,000). Of the fatalities, 4 died before producing a serum of any value, three of these being from anaphylactic shock, and one from abuse by other rabbits. Of the other three, one died of shock after producing our best serum, two died from heart aspiration, after producing workable sera. (See Tables 1 and 2.)

TABLE 1.

FIRST SERIES	IMMUNIZED BY	BEST TITER	RESULT
1	Pleuritic fluid	Opalescent	Died from bleed-
	H. blood serum	Very low	ing
2	Human serum	1/1000+	Still killed
3	Pleuritic fluid	1/500++	See series No. 2
4	Human serum	1/5000+	See series No. 2
5	Human serum	1/1000+	Retraction
			See series No. 2
7	Human serum	1/500+	Died from
			bleeding
8	Human serum	1/500++	See series No. 2
9	Human serum	1/1000+	
10	Pig serum		Died

Table 1 shows results of first series of immunization experiments.

TABLE 2.

SECOND SERIES	IMMUNIZED BY	TITER	RESULT
1	Hydrocele fluid	1/2000+	Died after
	and H. serum		bleeding
2	Same	1/10,000±	Still living
3	Beef serum	1/500+	Died. Serum
			infected
4	Pig serum	1/500+	Died— <i>anaphylaxis</i>
5	Pig serum	0	Died— <i>infection</i>
5*	Human serum	1/2000+	Died— <i>anaphylaxis</i>
6†	Human serum	0	Died— <i>anaphylaxis</i>
7	Beef serum	1/100±	Died— <i>infection</i>
8‡	Hydrocele fluid	1/1000+	Still living
	and H. serum		
9§	Hydrocele fluid	1/5000+	Died— <i>anaphylaxis</i>
	and H. serum		
10	Defibrinated H. blood—Hektoen method	1/1000+	Still living
12	Sheep serum	1/1000+	Still living
13	Pig serum		Not completed
14	Human serum	1/200+	Still living

Table 2 shows results of second series of immunization experiments. Pig and beef blood from slaughter house always contaminated. Sheep serum, aseptic.

* No. 4 in First Series.

† No. 3 in First Series.

‡ No. 5 in First Series.

§ No. 8 in First Series.

None of our rabbits gave sera of the high value recommended by Uhlenhuth (i.e. titer of 1-20,000). Comparing these results with those of other workers, we find that in Uhlenhuth's published protocols of 13 rabbits immunized with human serum, five were worthless, two reached the 1-20,000 point, but retrograded; five gave 1-20,000 serum, and one gave a titer of 1-200,000, these last six being killed, and the sera preserved.

Some years later in his Harben lecture (1911) Uhlenhuth made the statement that it is not uncommon to find but one rabbit in a series of ten capable of producing serum of the potency he requires.

Hektoen immunized nine rabbits by the rapid method, which he favors, with these results: One was refractory, four gave workable (1-2000 or under), two 1-10,000 to 1-12,000, respectively, two gave 1-20,000, his titers being read after standing one hour at room temperature.

Many writers do not specify their standards, but refer to their sera as strong or weak. Wassermann and Schütze use a different method of standardizing, but utilize relatively weak sera, warning against too high potency as tending to give group reactions. Muir and Martin say, "With the serum of rabbits vs. man .05 cc. precipitation is distinct with .001 cc. of human serum, almost absent with .0001 cc." Hektoen points out, and Uhlenhuth's protocols reveal that it is a matter of greater difficulty to obtain a rabbit anti-human serum of high potency than is the case with that of lower animals. This is also in keeping with the experience of many in preparing anti-human amboceptor for the Noguchi modification of the Wassermann test, and is the chief reason that it is not in more general use at present. Nuttall and Graham-Smith used the proportions of 1 part immune serum to 20 parts of solution of blood to be tested in their experimental work.

Granting the desirability of sera of high potency, especially for the important work of identifying medico-legal specimens, we do not feel that the conclusions to be drawn from the experiments about to be detailed are vitiated from having been made with sera of relatively low titer, though regretting that they are less far-reaching in their bearing upon the subject than they might otherwise have been.

More especially is this experience of value since it is the purpose of this paper to emphasize the difficulties and uncertainties of the method, that in cases where the circumstantial basis depends upon the identification of blood stains, they may be anticipated, and their possible consequences minimized by the exercise of suitable precautions on the part of the medical examiner.

In carrying out our tests we have followed the technic described by Uhlenhuth in his monograph, using always 1 cc. of the test solution of various strengths, and adding .1 cc. of the anti-

serum, except in some instances, where we used .05 or .06 cc. for reasons of economy. The tabulated experiments are with the former amount. The test solutions which he prescribes should be made to as near 1-1000 as possible, for the medico-legal test of a stain, and the controls are: (1) the test solution against normal rabbit serum, (2) fresh human serum against the anti-serum, (3) serum of some lower animal 1-200 against the anti-serum, (4) of some other animal ditto, (5) 0.85 saline, (6) an extract of the fabric or material from which the stain is taken.



PRECIPITIN TEST.

Typical Reaction (after settling 24 hours). All negative save No. 1 and No. 3, the test serum and known human serum, respectively; all other controls clear.

For the experimental work we have used more concentrated test solutions, as seemed more suitable to the titers of our anti-sera, viz: 1-100 or 1-200 as advised by Nuttall.

For the purpose of showing the intensity of our reactions we have adapted the method in common use for recording Wassermann tests, using a three plus (+++) to indicate a strong, two plus (++) a fair, one plus (+) a slight but definite, and a plus or minus (\pm) a very slight reaction.

(b) Trial Applications of the Test.

For nearly a year, in anticipation of the time when we should be provided with adequate sera, we saved blood material for the purpose of studying the efficiency and reliability of the method, particularly as regards the influence of drying. For this purpose we gathered bloody gauze from operating rooms, blood-stained dressings, clothing from medico-legal cases, blood-soaked newspapers, and an old sponge soaked with rather putrid blood. Solutions made from materials of this nature being obviously of uncertain strength, we adopted the plan, also, of drying accurately measured amounts (.1 cc.) of serum, and of defibrinated blood (containing corpuscles) on clean glass slides. Such specimens were made twice weekly from the blood sent to the laboratory for Was-

sermann tests, thus affording means of comparing solutions of known strength of varying ages, wherein obviously the serum would have been subject to no deteriorating influence other than that of drying.

Table 3 shows results of such tests with dried specimens from one to six months old, with a serum of low potency. The results there indicated show plainly that drying deprives the blood of some of its power to react with the precipitin. The question immediately arises, would this hold good if a stronger anti-serum were employed? Applying our strongest serum (1-5000) to two specimens of dried serum, five and eight months old, respectively, we find (as shown—see Table 4) practically the same result. The

TABLE 3.

TEST JAN. 26, 1916.

A.: H. Serum, No. 8, Second Series.

No.	TITER	1/100	1/500	1/1000
	Fresh serum	+++	++	—
	Dried serum			
1	1/3/16	+++	++	\pm
2	12/3/15	+++	+++	+++
3	11/2/15	+++	++	\pm
4	10/1/15	++	+	—
5	9/1/15	+	—	—
6	8/3/15	—	—	—
7	7/3/15	—	—	—
8	6/4/15	—	—	—

TABLE 4.

JAN. 28, 1916.

A.: H. Serum, No. 9, Second Series.

20 MINUTES	1/100	1/500	1/1000	1/3000
Fresh serum			+++	++
Dried serum				
9/9/15	+	—		
5/6/15	\pm	—		

solutions of the dried bloods were carefully made, and save for flocculi in some, which had to be filtered out, were complete, showing that lack of solubility was not the cause of failure to induce a reaction. Comparing No. 2, Table 3, with the fresh serum above, we find a more active reaction in the former, which represents serum dried nearly two months. The titer of the anti-serum there used was by previous tests established at 1-1000 (+), and the seeming anomaly suggests an *individual variation* in the power of blood to react with their homologous anti-sera.

Working with the specimen dried on various fabrics by extracting the stain with saline (.85) over night, centrifugating to greatest possible clearness and diluting to estimated strength of 1-200, except as otherwise indicated, and testing with both high and low value serum, 1-1000 and 1-5000, respectively, we obtain results shown in Table 5, which indicate again in general that the older the stain the less likely it is to react. The greater potency of anti-serum compensates somewhat for the inhibiting influence of drying.

TABLE 5.

TEST JAN. 18 AND 22, 1916.

A.: H. Serum R No. 8: 1/1000 value.

A.: H. Serum R No. 9: 1/5000 value.

No.	TEST OBJECT	SOL.	REACT. LITMUS	COLOR	SERUM 1/1000	SERUM 1/5000
	Beef serum, fresh	1/100	Neut.	Pale	±	—
	.85 saline solution		Neut.	Clear	—	—
	RECENT					
1	Menstrual stain on trousers		Neut.	Pale straw	+++	—
2	Ascitic fluid	1/17/16	Neut.	Very pale straw	+++	+++
	1 Gauze	1/200	Neut.	Pale straw	+++	+++
3	Pus dressing	1/17/16				
4	Blood on newspaper	11/17/15	Neut.	Pale brownish	+++	—
5	Blood on newspaper	11/5/15	Neut.	Pale brownish	—	—
6	Blood, abdominal dressing	9/14 (a)	Neut.	Reddish	±	+++
7	Blood, abdominal dressing	9/14 (b)	Neut.	Reddish brown	—	—
8	Blood, sponge, foul	5/19/16	f. ac.	Reddish	+	+++
9	Blood, cloth	5/19/16	Neut.	Pale straw	+	+++
10	Blood, "Burke" Gauze ..	5/15/15	Neut.	Pale straw	—	—
11	Blood, shirt	18 mo. old	Neut.	Limpid	—	—
12	Blood, victim's shirt	12/21/14	f. alk.	Reddish	—	—

and also seems to indicate, as above suggested, that there is variation in power to react with the precipitin in the blood of individuals of the same species, especially shown by Exp. No. 10 in Table 5, in which the test object was a gauze pad from the operating room, saturated with blood, put into a clean envelope and kept in the laboratory, in a drawer, and which could not have been contaminated, yet which has invariably resisted the precipitin test with several different sera, and is comparable to the results with the blood-stained shirt from the murdered man, which tested three months after the murder by one of the best serums I have produced, by the serum imported from Germany, and recently by our best serum (13 months after the murder) as shown in Table 5 has been invariably negative. To my mind these results suggest that there are certain bloods which react to a precipitin developed by serum from certain other individuals of the same species so weakly that drying completely inhibits them. An important deduction from the observations is that in an important case it would be well to save some of the fluid blood at the autopsy, which might be used to immunize, on the expectation of a more valuable serum for that individual, and to saturate some filter paper or gauze, and dry, to preserve for use as control in making the tests,—a precaution advised by Uhlenhuth, and called to the attention of this Society by Dr. Whitney fourteen years ago.

Recalling the case narrated at the outset,—our failure to reach a conclusion as to the identity of the stains found in the stable or on the murdered man's shirt by means of the precipitin test is noteworthy. On that account we are led to diverge from the specific subject of this communication briefly to cite the further pursuit of that important question,—were the stains made by human blood?

After the trial there remained to us the blood-

stained plank, the shirt mentioned, and a small bunch of hay chaff, matted together by a brownish substance which gave the guaiac and ben-zidin tests for blood, and was similar to the material which Professors Whitney and Balch had testified was mammalian blood.

Applying the complement-fixation method of Neisser and Sachs, we obtained a strongly positive test with the solution from the straw, and an absolutely negative one from an infusion of the unstained straw. This corresponded to the reaction by the same method from solutions made from the stains on the shirt. Solutions from the plank stains also gave positive reactions, but solutions from this source proved in control highly anti-complementary, and therefore useless for this test. The solution from the shirt was also found to be slightly anti-complementary, but we thought not sufficiently to discount the reaction completely. The solution from the hay stain was diluted to the point where anti-complementary power disappeared, and then showed a distinct binding of complement,—a reaction equivalent to the "1+" Wassermann test. Controls with beef and pig blood were negative. Solutions from the stain on gauze pad No. 10 in Table 5, and from the sponge with old putrid blood, both gave strong positive tests.

The authors Neisser and Sachs claim for their method a delicacy forty times that of the precipitin test, while Muir and Martin think it between 10 and 100 times more delicate. It certainly is more striking, and is not vitiated by slight cloudiness of the test solution. It is far more complicated and requires elaborate controls, and the outfit of a Wassermann laboratory is needed. Uhlenhuth claims that in the absence of a positive precipitin reaction, this test is insufficient to establish the source of the blood.

CONCLUSIONS.

From the results herein described we may draw the conclusions:

1. That the precipitin test *when it reacts* is a valuable and positive method of identifying blood stains (albumins). A negative test does not of itself *disprove* the presence of the homologous blood.

2. That the preparation of a serviceable serum may be a matter of weeks, and consequently a supply of adequate sera should be on hand, in order that the stains may not be subjected to prolonged drying before testing.

3. That in a murder case it would be of advantage to have blood from the victim in sufficient quantity to carry out an immunization, thus being better prepared to obtain a serum of high specific value.

4. That there may be individual variation in power of blood to respond to the precipitin test; consequently, failure to identify should not be considered final until other and stronger sera and the complement-fixation test have been tried.

Finally, we are glad to have occasion to pay a tribute of respect and admiration for the monumental labors of Professors Uhlenhuth and Nuttall and their co-workers and for the wonderful care, patient persistence and masterly insight with which they have, over a period of several years, studied by countless experiments the subject of precipitins, both in relation to their value to forensic medicine and in their bearing on biological problems, and by means of which they contributed appreciably to our knowledge of one of the processes by which Nature works her marvels of immunity, as well as finding important evidence of the blood relationship of certain species, supporting by tangible evidence certain conceptions of the evolutionists.

Our thanks are due to Professor William F. Whiting for the loan of Prof. Uhlenhuth's monograph, to our associates at Worcester City Hospital for saving and forwarding materials for the work, and to Dr. Frederick H. Baker for privileges in connection with the case cited.

[From the Laboratory of Pathology at Worcester Hospital.]

NOTES.

NUTTALL, p. 75 "In medico-legal work it will be desirable progressively to dilute a suspected blood sample, and to reach a conclusion upon the highest dilution (within limits) which reacts to a given anti-serum. In routine work, as I have stated, I have worked with dilutions of usually 1 : 100 to 1 : 200. As the dilution increases, the reaction narrows down more and more, the reactions with the highest dilutions being practically specific."

NUTTALL, p. 298. Ohamoto (4-1902) testing various human blood stains obtained negative results in about 1-7 of them. He found very old and putrid blood generally to give a negative result.

GRAHAM-SMITH, dilutions 1-21, using distilled water as the first solvent, made a series of tests on blood-stained implements from Scotland Yard. All

but one of 17 specimens, aged from 5 months to 30 years, were positive in from 5 m. to 1 hr., incubated at 37 C., except one which was mixed with rust and oil. Blood-stained fabrics from same source, 3 to 28 years old, obtained clouds in from 15 minutes to 1 hour in 10 out of 12.

UHLNHUTH tested upward of 60 specimens of dried blood from various animals as well as human sources placed at his disposal by the Prussian Minister of Justice, not being informed of the sources, with correct results in every case. He also records tests of mummified (preserved) specimens many years old, the source of which he was able to identify. Other stains he identified, varying from 6 to 12 years of age.

Many recorded results of tests, which state no definite values of sera used, are useless to us for purposes of comparison.

Both Nuttall and Uhlenhuth warn against the use of sera of high potency with low blood dilutions, on account of group reactions.

BIBLIOGRAPHY.

- Nuttall: Blood Immunity and Blood Relationship.
Uhlenhuth and Weidman: Praktische Anleitung zur Ausübung des biologischen Eiweiss-Differenzierungsverfahrens mit besonderer Berücksichtigung der forensischen Blut- und Fleischuntersuchung sowie der Gewinnung präzipitirender Sera, Ohamoto: Quoted in 1.
Nuttall and Dinkelspiel: Journal of Hygiene, July, 1911.
Graham-Smith: The biological or precipitin test for blood, considered mainly from the medico-legal aspect, Jour. of Hygiene, 1902, Vol. III, pp. 354-363.
Graham-Smith and Sanger: Ibid, pp. 258-290.
Patch and A. J. Bennett: American Medicine, Vol. iv, p. 374.
Wassermann: Deutsche Med. Wochenschr, 1904, No. 12.
Welsh and Chapman: A contribution to the study of precipitin reactions by gravimetric estimation of the deposits, Australasian Cong. Transactions, Victoria, 1909, Vol. II, pp. 269-273.
Welsh and Chapman: Jour. Hygiene, 1910, Vol. V, pp. 177-181.
Uhlenhuth: The Harben Lecture, Journal Royal Inst. Public Health, London, 1911, Vol. xix, pp. 640-660.
Steenesen: La différenciation du sang par le sérum spécifique, Ann. d'hygiène et de méd. lég., 1902, Sept.
Hektoen, E.: Proceedings, Chicago Pathological Society, Journal of Infectious Diseases, Chicago, 1914, Vol. xiv, pp. 403-410.
Linnosier, G., et DeMoine, G. H.: Sur les sub. précipitantes des albumines (precipitines) contenues dans certains sérums spécifiques, Ann. de la Société Biologie, 1902, Jan. 25, p. 85.
Carnot: Spécificité et condition d'action de précipitine, Compt. rend. de la Soc. de Biol., 1901, July 6.
Cattell: Post-mortem Diagnosis.
Wood, E. S.: Medico-Legal Examination of Blood Stains, Boston Medical and Surgical Journal, Vol. cxlv, pp. 533-537, 1901.
Whitney, W. F.: Notes on the Production of the Test-Serum in Rabbits, BOSTON MEDICAL AND SURGICAL JOURNAL, 1901, No. 146, p. 429.
Anstey: Limitations of the Uhlenhuth Test for the Differentiation of Human Blood, BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. cxlv, p. 239.
Moir, R., and Martin, W. B. M.: On the Deviation of Complement by a Serum and Its Anti-Serum, and its Relation to the Precipitin Test, Jour. of Hygiene, 1906, p. 265.
Welsh, K. A., and Chapman, H. G.: Precipitin Anti-Sera and their Standardization, Jour. of Hygiene, 1906, p. 251.

FIBROMA OF MEDIASTINUM: REPORT OF A CASE.

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AMONG the diseases of the mediastinum, tumors, both benign and malignant, occupy a most interesting and important place. The differentiation of malignancy or benignity of such a tumor is more histological than clinical, since the ill effects are mostly due to pressure upon various vital structures situated in this limited area. A simple benign tumor, elsewhere sit-

uated, attracting little attention and doing little or nor harm, may in this region, on account of its peculiar locality, cause grave consequences.

A simple benign fibroma of the mediastinum is of very rare occurrence. It is so rare, indeed, that it has been considered a pathological curiosity. Hare¹ in his collection of 520 cases of affections of the mediastinum, was able to report seven cases of so-called fibroma, from the literature. Some of them were undoubtedly incorrectly diagnosed. Hoffman² accepted five out of the seven cases, but some of the original articles were not available to him. The greater part of this number were more in the nature of fibrosarcomata than simple fibromata, as was pointed out by Christian³. So far as it is known to me, there have been no new cases reported, with the exception of those of Forni⁴. In his series of tumors of the pericardium, he has been able to collect three cases of fibroma, which were of comparatively recent date.

Although the general tendency is to classify fibromata of the pericardium under a separate heading, for the sake of convenience and completeness as well as on anatomical grounds, they could be classified under the general heading of fibromata of the mediastinum.

Through the courtesy of Dr. Christian, the writer is permitted to report the following case of typical simple benign fibroma of the mediastinal region, and to add it to the scanty total.

The patient, a white man, 51 years of age, was admitted to the medical wards of the Peter Bent Brigham Hospital on September 14th, 1915, complaining of "cough and dyspnoea." His family history was negative and his past history uneventful except for an operation nine years ago for gangrenous appendicitis, with phlebitis and questionable pleurisy as sequelae. He led a busy life as chairman of a board of assessors, with considerable nervous strain. He was free from any cardiac-respiratory ailment prior to his present illness, which began a little over one year before admission, with slight dyspnoea. His cough began in the summer of 1914 and was aggravated by a bad cold in the autumn of the same year. Cough was worse at night than in the day. It was brassy in character and only productive in the morning. This persisted and grew worse, often keeping him awake all night. He had "fever" and was kept in bed for two weeks in March, 1915; he was thirteen pounds underweight two weeks before admission.

On physical examination he was a well developed, well nourished and moderately muscular man, free from any pain. His mental state was clear. His voice was hoarse. The left clavicle was perhaps a trifle more prominent than the right. Respiration was quiet, slow and shallow. There was good resonance throughout the whole lungs, with possibly some impairment below the left clavicle, where both breath sound and vocal fremitus were decreased. Here some fine and median râles were heard. The apex beat of the heart was felt 9 cm. from the median line in the 5th interspace; the left border was percussed 9.1-2 cm. and the right border 2.1-2 cm. from the median line in the 4th interspace. The above cardiac dulness began at the

3rd rib. The cardiac action was slow and regular. There were no murmurs and no retro-manubrial dulness. The radial pulses were equal, regular and synchronous; rate the same as that at the apex. They were of good volume and low tension. Carotid arteries and jugular veins were normal on both sides. Vessel walls were somewhat sclerotic. Systolic blood pressure, 115; diastolic blood pressure 85, being equal on the two arms. Larynx showed some redness and edema of false vocal cord. The vocal cords were symmetrical, white and met symmetrically on phonation. His temperature was always normal in the morning, but became slightly elevated in the evening, twice reaching 100 degrees F. No tubercle bacilli were found in the sputum, which, however, contained many pus cells, mononuclear cells and a few organisms. Wassermann reaction (blood serum) was negative. Upon removing the Rehfus tube, after withdrawing the stomach contents, a distinct resistance to the extraction of the tube was felt and a considerable amount of force was needed to withdraw it. The gastric juice contained no free hydrochloric acid. Roentgenological examination showed a definite shadow extending a considerable distance beyond the normal shadow of left auricle. The transverse diameter of the heart at this region, including the shadow, measured 11 cm. The ventricles were small in size and the posterior mediastinum was clear. By fluoroscopic examination, a definite pulsation, diastolic in time, was observed over the shadow beyond the region of the left auricle.

Under treatment, the patient gradually gained in strength and appetite and his diarrhoea very much improved. He was discharged on September 22d, 1915. The following diagnosis and possible diagnoses were made: Hypochlorhydria; Aneurysm of the aorta? Neoplasm or cyst at the root of lungs originating in the mediastinum? Pulmonary tuberculosis?

On October 4th, 1915, patient again came to the Peter Bent Brigham Hospital in the hope of being relieved of his cough, which still distressed him a great deal. His symptoms and signs were practically the same as those recorded during his first admission. Fluoroscopic examination showed the shadow of the mass in the region of the left auricle had not increased in size. It did not seem to be connected with the aorta. As he was rotated in position, the shadow did not seem to extend far enough posteriorly to be on the level with the descending aorta. It still pulsed and the pulsation was seen quite definitely following the pulsation of the ventricle. Well above the cardiac shadow was a distinct and clear shadow of aorta. No evidence of diverticulum, constriction or irregularity of esophagus was noticed. He was discharged again on October 7th, 1915, practically in the same condition as before.

He went back to work. His cough was unimproved and no new symptoms appeared until February, 1916, when there developed an ischiorectal abscess which was promptly incised by his physician, but refused to heal. At the same time he had a severe bronchitis accompanied by elevated temperature. On examination, moist râles were heard over bases of both lungs, but the left lung was more involved. Culturally, Pfeiffer's bacilli and a few pneumococci were obtained from the sputum. He steadily lost flesh and had bronchorrhoea (5-6 oz. daily); attacks of dyspnoea after slight exertion.

severe cough with occasional sweating and some elevation of temperature (100-101 degrees F.). His diarrhoea had subsided, but his appetite was very poor. A fluoroscopic examination made at this time showed the shadow in the region of the left auricle to be very much larger than when it was observed in the hospital. It did not move when the breath was held and no pulsation whatever was seen. He died on May 10th, 1916. "Death was from septicaemia, the final infection being of the cheek, the buccal surface of which presented as a sloughing and stinking ulcerative process."

Autopsy was performed by the patient's physician and his notes were as follows: "On removal of the sternum, a tumor presented in the anterior mediastinal space over the pericardium. No metastases were found. The left lung was free and normal in appearance, collapsing normally. The right lung was densely adherent to the pleura throughout, engorged with blood, and friable. Heart and vessels seemed normal. On account of arterial embalming, no careful incision was made either into the lungs or through the arteries." Although the autopsy was far from complete, there were no evident metastases found and the tumor did not assume an invasive character.

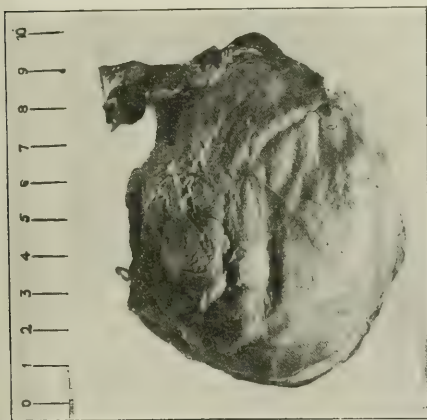


FIG. 1. TUMOR UNCAP.

Notice the size and shape of the tumor and its smooth capsule. The stump has been removed.

Grossly, it is a circumscribed, flat oval tumor (Fig. 1) of a rather firm consistency measuring 9x8x4 cm. and weighing 180 gms. It is enclosed in a definite capsule which can be stripped off with little difficulty. The surface of the tumor is smooth as a whole with a few small oval projections. At the posterior aspect of the tumor, in continuation with the capsule, there is a short connective tissue stump which apparently served as an attachment to the anterior wall of the pericardium. On section the tumor is found to be composed of numerous lobes of grayish color and of various sizes, separated from one another by bands of connective tissue. In the capsule, numerous connective tissue bands with blood vessels can be seen extending down into the tumor. The small nodular projections can be separated with little force. They are compara-

tively soft and can be crushed with the fingers. In one half, the tumor is much more fibrous than in the other and the nodular projections softer.

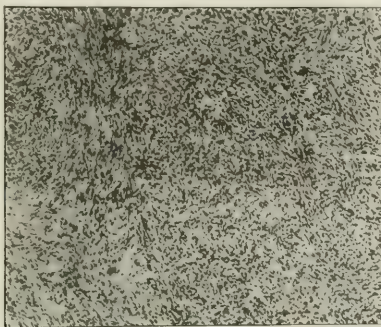


FIG. 2. PHOTOMICROGRAPH.

Notice the uniformity of the cells, the irregularity of arrangement and many lymph spaces. 150x.

Microscopically, the tumor (Fig. 2) is found to be composed of masses of connective tissue cells which are well defined and differentiated, but very irregularly arranged. It is well supplied with blood and lymph vessels. The connective tissue stroma is abundant and separates the tumor into lobules. The individual tumor cell is spindle in shape with a fusiform nucleus rich in chromatin. No mitotic figures are found. Collagen fibrils are abundant. There are no signs of degeneration or necrosis.

Pathological diagnosis:—Fibroma durum.

From the standpoint of physical diagnosis, there are two groups of signs and symptoms, namely:—Symptoms attributable to pressure in the mediastinal region manifested by his chronic cough, hoarseness of voice, dyspnoea and the resistance offered to the extraction of the Relufus tube, and secondly a definite shadow in the region of the left auricle observed by fluoroscopic examination, which pulsated diastolic in time in the earlier observations. A diagnosis of aneurysm of the aorta would naturally be considered. But the fact that the pulsation was diastolic in time, and that roentgenological examination showed the mass to be unconnected with the aorta practically rules this out. The other condition which would give the above mentioned symptoms and signs is a neoplasm of the mediastinal region. In fact, such a diagnosis would account for and explain everything very well except for the fact that the mass pulsated. But one must not forget that a transmitted pulsation is not at all an impossible sign of a tumor. The final disappearance of the pulsation can be explained on the ground that the tumor had become more fixed as it increased in size. The question naturally arises as to whether the tumor was benign or malignant. The extremely slow growth, the absence of symptoms of invasion or metastasis were strongly in favor of benignness.

FIBROMA OF MEDIASTINUM.

No. And	Sex	OCCUPATION	AREA INVOLVED	CHIEF SYMPTOM	DIAGNOSIS	WORK REPORTED	DURATION	RESULT	REMARKS	
1	42	F.	Housewife	Anterior Mediastinum	Face anxious, livid; edema and dyspnea.	Fibroma (?)	Pastau, Virch. Arch Bd. xxxiv, p. 236, 1895.	4 yrs.	Death	Original literature described an invasive tendency. More in the nature of fibro-sarcoma.
2	24	M.	School Teacher	Ant. and Mid. Mediastina	Pain in chest, dyspnea, hoarseness.	Fibroma (?) Lympho-sarcoma (?)	Fox, Lancet, Oct. 25, 1878, p. 577.	5 mos.	Death	Growth attached to cartilages of first ribs. Had invasive tendencies to left lung. All organs were imbedded in the growth at this region. Caries of sternum.
3	52	M.		Pain and dyspnea.	Fibroma.	Wielman, Schmidt's Jahrbucher, Vol. cxlii, p. 311.		Recovery		
4	50	M.		Pain and emaciation.	Fibroma (?)	McDonald, Jour. de med. et chir. et pharm., Vol. xxxvii, p. 454.	4 yrs.	Death	Symptoms simulated aneurysm. Original article not available.	
5	61 (?)	M. (?)		Pain, cough and emaciation.	Fibrous Thickening, Malignant (?)	Gull, Guy's Hospital Report, Ser. v, p. 307.	4 mos.	Death	No age, sex, duration or symptoms were given in Hare's series. Joseph J. was probably the case he meant. Lungs, vagus and plexus invaded.	
6	—	—				Oberstumfner, Jahrbuch der Ver-waltung. med. u. et c., des Canton Zurich, 13, 1884.		Death	The original article not available. Growth from sternum.	
7	25	M.	Laborer	Great dyspnea and cough.	Cellular Fibroma (?)	Bareley, Lancet, Feb. 21, 1884, p. 244.	9 wks.	Death	Duration only 9 weeks. Tumor itself reached coccygous size. Numerous minute nodules in peritoneum. Probably fibro-sarcoma.	
8	35	M.			Fibroma Molle.	Kaufman, Lehrbuch der spec. patho. anat., Berlin, 1909.		Death	Three polyloid, fibro-epithelial, lobulated soft tumors, over the internal surface of fibrous pericardial sac.	
9	62	M.			Fibroma (?) Spindle Cell Sarcoma.	Legend, Societe patho. Bruxelles, 2 Mai, 1912.		Death	Tumor edematous and vascular, reddish, fleshy in color.	
10	71	F.			Fibroma.	Forni, Tumori, Anno iv, Fasc. v.		Death	Tumor the size of a three-year-old child's head situated over parietal pericardium.	
11	52	M.	Chairman Board of Assessors	Cough and dyspnea.	Fibroma Durum.	Shen.	2 yrs.	Death	Patient died of septicaemia. Had coexisting pulmonary tuberculosis.	

The patient almost undoubtedly had a coexisting pulmonary tuberculosis. His steady loss of flesh and strength, his irregular fever, his low blood pressure and relative lymphocytosis, his repeated attacks of cold, his ischio-rectal abscess and buccal abscess, and finally the finding in his right lung at autopsy were almost certainly manifestations of tuberculosis.

Surgical removal of the tumor was his only hope of permanent relief, and the character of the growth was such that the operation possibly could have been performed successfully.

Above is a chart of the recorded authentic cases of mediastinal fibromata, to which is added the one here described.

BIBLIOGRAPHY.

- ¹ Hare: Pathology, Clinical Histology and Diagnosis of Affections of Mediastinum. Philadelphia, 1889.
² Hoffman: Nothnagel's Spec. Pathol. and Therap., viii, 1897.
³ Christian: Osler, Modern Medicine, Vol. III, Mediastinum, 1907.
⁴ Form: Tumors, Anno IV, Fascio V, 525.

FUNDAMENTAL CONSIDERATIONS IN THE TREATMENT OF THE PSYCHONEUROSES.*

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THE psychoneuroses may be defined as functional conditions of emotional origin, that interfere more or less seriously with the efficiency and health of individuals.

They include neurasthenia, hysteria, and possibly psychasthenia. They do not include true fatigue and exhaustion, nor organic conditions due to internal glandular disturbances, such as hyperthyroidism and the menopause. Nor do they include, according to some authorities, cyclothemia, hypochondriasis, nor psychasthenias with obsessing phobias and doubts of a non-emotional nature. Nor under hysteria is to be included mythomania—self-mutilation—which is more properly considered a true psychosis. Superimposed upon any organic condition, however, may exist psychoneurotic symptoms. The number of individuals suffering from the psychoneuroses, or from psychoneurotic symptoms, is admitted tremendously large. Treatment of these conditions certainly is rendered more efficient if some working hypothesis is held regarding the mechanism of their origin and action.

It seems justifiable to consider that the psychoneuroses which have been defined as functional conditions of emotional origin, involve a circle in which are included the mind, the autonomic and sympathetic nervous center, glands of internal secretion, and the viscera—a cir-

cuit running from the brain to autonomic or sympathetic nervous centers, sometimes to ductless glands, to viscera and back to the brain. Such a circle of impulses exists normally for every individual. But when the individual becomes conscious of the impulses returning from the viscera, and this consciousness starts a secondary series of impulses involving this same circle, the results may be considered to be a psychoneurosis. And the more numerous, complex, and long standing such secondary series become, the more firmly established and serious is the condition.

For example—a man crossing the street is nearly run down by an automobile. He jumps out of the way to safety. With his muscular action there is a quickening of the pulse, a deeper breathing, possibly his hair stands up a bit, he starts perspiring, and he feels a little faint. The normal man is scarcely, if at all, conscious of the activity of his vegetative system, and goes on his way without second thought of this physical reaction. The psychoneurotic, however, notices the palpitation of his heart, fears it is out of order, or going to stop beating. This secondary fright makes him so weak that he has to be carried home in a carriage perhaps, etc., etc., with one complication after another.

The hysteric, on the other hand, upon becoming more or less conscious of the impulses from his viscera, seemingly develops secondary symptoms involving, for the most part, the voluntary muscular system. He "loses control of himself" and can't stop doing, or can't do things that are ordinarily under his control—he can't stop crying, can't move his leg, can't feel his arm, etc.

In the Boston Psychopathic Hospital Out-Patient Clinic many psychoneurotic cases appear. Analysis of a series of 35 of these cases shows that 80% of them come to the hospital complaining of symptoms such as constipation, palpitation of the heart, weakness, easy fatigability, etc., which are physiological symptoms of fear. Study of these cases readily reveals in many cases definite fears—fears of going insane, fears of impotency, fears of approaching death, etc.

For example: A. B., an electrician, 40 years old, previously well, came to the hospital to find out whether he was going insane. He had been to his local physician who had looked him over physically and told him he was perfectly sound. The patient reasoned that if he were physically well he must be losing his mind, as he could not otherwise explain his symptoms which had incapacitated him for work. Some months ago he went to a private surgical hospital and was operated on for hernia. The operation was entirely successful, but a few days afterwards he sat up abruptly for the first time and felt faint. Never having been physically incapacitated in this way before, he concluded that he was about to die. He broke out into a sweat and felt "all in." Convalescence at the

* Read at the fall meeting of the New England Society of Psychiatry, September 26, 1916.

hospital continued without further trouble, but shortly after returning home he had another faint spell. Again he thought he was going to die. These spells became more common. He could not go back to his job.

C. D., a salesman, was accustomed to drink a good deal and smother his morning headache with bromo-seltzer. One morning the headache continued to be severe in spite of the medicine. The idea occurred to him that he had permanently injured his brain. He felt weak, had palpitation of the heart, constipation, headache, etc. He became unfit for work, and applied at the hospital, requesting to be sent away somewhere to prevent his going insane.

Both of these cases seemingly were suffering principally from fear symptoms, and both of them were greatly relieved immediately by learning the possible mechanism of the development of the condition.

This conception of the mechanism, so to speak, of the development of the psychoneuroses does not consider the etiology of these conditions, whether due to adequate stimulus or sufficient receptivity or both; nor what the quality, intensity or duration of the stimulus must be, nor whether the receptivity is congenital or acquired through disease or environment. But it helps us to understand why such varied and numerous forms of treatment have proved more or less effective in the treatment of these conditions. Some methods of treatment attack the problem from one point of the circle, others attack another point. Change of environment, isolation, and lessening or solution of environmental difficulties, tend to decrease the arousing of emotions. Hydro-, electro-, helio-, and mechanotherapy, massage, and surgical interference tend to modify the activities of the autonomic system and the glands of internal secretion. These same therapeutic measures, together with mechanical aids, such as belts, braces and posture exercises, tend to facilitate the activities of the viscera. Occupation and diversion tend to divert the individual's attention from his visceral symptoms and prevent some of the secondary circles of emotional activity from being formed. Rest, extra feedings, fresh air, general hygiene and drugs lessen irritability and tendencies to excessive reaction to stimulation. Hypnotism and suggestions also tend to prevent such secondary circles from being formed. Christian Science works along this same road. Psychoanalysis and psychotherapy, in so far as they help the individual to understand and properly appraise his symptoms, or, when merely occupation and diversion in a new disguise, are certainly of therapeutic value in arresting the formation of secondary emotional circles, but they are assuredly two-edged tools, and by augmenting introspection, and by stirring up quagmires without sounding or removing them, in many cases do as much or more harm than good.

In a recent text book on Diseases of the Nervous System, by eminent writers, these three statements appear within five pages of one another. " . . . in others still months of careful work are required." " . . . for the psychoanalyst should under no circumstances undertake to treat the physical condition." " . . . it is undesirable to have another physician treating the patient at the same time."

Few so-called normal individuals can get along for six months without an occasional somatic disturbance meriting attention. Is it to be questioned that psychoneurotics need at least as much physical care?

The proper treatment of the psychoneuroses should not consist in attacking the condition from a single point, whether that single point be by means of occupation, rest, isolation, hydrotherapy, surgery, drugs, electrotherapy, suggestions, psychoanalysis, or psychotherapy. It should consist in attacking the patient's vicious circle of emotional activity from as many different points as possible at the same time; and by a combination of efforts to lessen emotional activity, reduce irritability and rectify visceral activities, results can be hoped for that are not to be gained, or are gained only at great cost of time and labor, when treatment is confined to a single therapeutic measure.

DIABETES MELLITUS AND SYPHILIS.

By JOSEPH H. BARACH, M.D., PITTSBURGH.

WHILE in a general way clinicians recognize a probable relationship between syphilis of long standing and diabetes mellitus, a résumé of the literature bears out the observation of Whartin and Wilson¹ that it is generally believed that the immediate relationship of these two diseases is rare. The investigations of these authors showed that at post mortem in practically all of the old syphilitic cases they found a pancreatitis local and patchy in character, while in some they found a pancreatitis severe and diffuse. All of their diabetic cases showed one or the other form of pancreatitis, but not all cases of syphilitic pancreatitis presented the clinical symptoms of diabetes mellitus.

From my own experience I am led to believe, as Whartin and Wilson contend, that the coincidence of syphilis and diabetes is not a rare one and deserves our full recognition. In going over the records of my private cases of the past 2 1/2 years, I find thirty-one cases of diabetes. Out of these, three were primarily cases of syphilis.

Two of these were referred to me by a syphilographer, Dr. T. L. Disque, and the third case came because of a tumor (gummata) under

his chin, which he suspected may be due to his former trouble, syphilis. Out of the twenty-eight remaining cases, one case, a physician, became infected with syphilis seventeen years ago and now has a strongly positive Wassermann. Another case was that of a man whose wife had syphilis and was treated for ten years, and the other, a woman, was the wife of a paretic, and herself gave evidence of a syphilitic infection. These six cases in which syphilis and diabetes were coincident therefore present themselves in two groups. Group A, in which the syphilis is in its active stages, and group B those presenting the clinical picture of diabetes mellitus and with that giving a history of or evidence of syphilis.

Group A.—

CASES OF SYPHILIS COMPLICATED BY DIABETES.

CASE 1. C. T. Age 24. Family history negative. He acquired syphilis thirteen months ago. Typical primary and secondary lesions. Wassermann positive. Six months later polyuria, polydipsia and glycosuria. Lost twenty-one pounds in last year. Ten months after infection alopecia areata, glandular enlargement, mucous patches and Wassermann positive. On the day previous to beginning of treatment his sugar output was 82.5 gm. With strict dieting and intensive specific medication consisting of mercury and salvarsan he has been sugar-free for three months. His tolerance now is 90 gm. bread daily, 5-10-15% vegetables, 60 gm. meat and fat in proportion. He is now at work and is progressing very satisfactorily. Moderate excess in diet causes a partial oxidation of Benedict's solution.

CASE 2. W. B. Age 41. Infected December, 1912. Wassermann positive. Typical case. Sugar and albumin found in urine January, 1914. He had been having an inordinate desire for candy and sweetened foods. Aside from the sugar patient had a severe albuminuria up to 3.5 gm. per li. Esbach's method. Strict diet instituted, improvement slow but steady. In April, 1915, after dietetic indiscretion, sugar output 13.68 gm. per day. Strict diet caused disappearance of sugar. On a diet containing 60 grammes of meat one day and eggs and fish on alternating days, about 120 grammes of bread 5-10-15% vegetables and fat as desired, avoiding sugar and sweetened foods, he has been able to keep sugar-free. Along with this his albuminuria has decreased to a mere trace. In his antisyphilitic treatment we have had to be cautious but persistent. He does not tolerate large doses of mercury. Iodides and neosalvarsan are tolerated well. After no specific treatment for three months, his Wassermann reaction is now negative, and I believe his sugar tolerance has improved.

CASE 3. H. E. Y. Age 48. Acquired syphilis seventeen years ago, irregular and inefficient treatment. Ten days ago noticed tumor under jaw, increasing in size, painless and hard. Incision by surgeon resulted in drainage of a small amount of bloody fluid. His Wassermann was strongly positive. Urinalysis shows 0.33% sugar. During past month lost six pounds weight, polydipsia and polyphagia.

Although a busy man he has acquired the habit of carrying candy in his pocket and always has a box of candy on his dresser. Low carbohydrate diet caused prompt disappearance of the sugar. Mercury, iodides and salvarsan caused prompt disappearance of the mass. This mass was the size of a large plum, and it disappeared within two weeks after treatment was begun and without a second incision. Progress of the case at present is very satisfactory.

Group B.—

CASES OF DIABETES WITH SYPHILIS IN THE BACKGROUND.

CASE 4. M. L. Y. Age 37. Nineteen years ago contracted lues, with that has been a heavy drinker. His treatment has been insufficient and irregular. Three months ago diabetes first discovered. Loss of nearly thirty pounds in weight, polyuria, polydipsia, polyphagia. Urine from 3000 cc. to 7000 cc. daily. Sugar output 47.52 gm. on day previous to beginning of Allen treatment. Physical examination shows the liver enlarged upward and three fingers' breadth below costal margin. Wassermann strongly positive. Sugar-free after forty-eight hours, fair carbohydrate tolerance, specific treatment being followed.

CASE 5. Mrs. A. K. L. Age 55. Her husband developed paresis ten years ago. After her husband went to the asylum patient had a "sore" at the base of her spine which lasted nine months. This was seven years ago, and she has never been well since. Three years ago an attack of "diabetic coma." Since the diagnosis of diabetes was first made she has lost thirty pounds in weight. Knee reflexes absent; pupillary signs negative; retinitis of right eye. Daily output of sugar varied from 3.0 to 75.0 gm. according to strictness of her diet, against which she was very rebellious. Fasting treatment was not attempted nor were we able to keep her on a low carbohydrate diet. She died in diabetic coma two years from the time I first saw her.

CASE 6. Mr. H. J. S. Age 40. Diabetes discovered two years and three months ago. Patient denied syphilis and refused a Wassermann, but his family physician had treated his wife for syphilis intermittently for ten years. No children. Physical examination shows liver enlarged and superficial lymphatic glands large. In two years patient lost twenty-five pounds; polyuria, polydipsia, polyphagia. Daily sugar output from 120 to 275 gm. He came under our observation irregularly and six months later died in diabetic coma.

While these last two cases are not proved cases of syphilis, their history has a certain value in this connection.

THE WASSERMANN REACTION IN DIABETES MELLITUS.

Richards² reported four cases of diabetes with marked acidosis giving a positive Wassermann, two cases of slight acidosis with a negative reaction, and one case of non-diabetic acidosis with a negative reaction. If the acidosis of diabetes were capable of producing complement fixation it would complicate the correct

diagnosis of syphilis in this class of cases. Later and more extensive investigations indicate, however, that the acidosis of diabetes is not responsible for the positive Wassermann.

Walker and Heller² found in eighty-nine cases of diabetes, seven with positive Wassermann, the majority of them giving a history of syphilitic infection. One case of diabetes developed six months after beginning of the infection and other parallel cases were observed. Walker and Heller claim that on repeated tests, under various conditions, the Wassermann reaction was noted to be uninfluenced whether there was much or a little sugar in the blood or urine, and whether or not the patient was in coma.

My own observation in fifteen diabetics, some of them having severe acidosis, showed no positive Wassermans in the absence of syphilis.

CONJUGAL DIABETES.

Weber⁴ reports three cases of conjugal diabetes in sixty, and Senator⁵ claims that conjugal diabetes occurs in 1% of all cases. Beal⁶ quotes Hofmeister, who has collected two hundred of such cases. Conjugal diabetes points as much to a common infection as to any other interpretation that we may place upon it. Conjugal paresis, recently discussed by Drysdale⁷ is becoming recognized and is not at all rare. If the work of Rosenow is finally accepted, it will be that certain strains of spirochaete or other infective organisms possess a selective action or affinity for certain organs. Thus one strain will be known to be pathogenic for the nervous system and another for the eye and another the pancreas, etc. It seems possible that conjugal diabetes may be the result of conjugal syphilis.

RÉSUMÉ AND COMMENT.

Here are recorded three cases of syphilis, in which the spirochaeta pallida is active and in which the clinical symptoms of diabetes mellitus have appeared. Such cases are supposed to be rare and the relationship of these two diseases is not generally recognized. Whartin and Wilson find post-mortem evidences which suggest that syphilitic pancreatitis is a comparatively common condition, and the above reported cases, as well as the cases referred to by Walker and Heller, show that diabetes not uncommonly follows syphilitic infection.

Cases 4, 5, 6 are reported for the purpose of contrast only, Case 4 presenting no external evidences of active syphilis, although the Wassermann is strongly positive. Cases 5 and 6, I fully believe, were syphilitic, but time and circumstances did not permit us to obtain positive proof.

REFERENCES.

- ¹ Whartin and Wilson: *Arch. Jour. Med. Science*, August, 1916.
- ² Richards: *Journal A. M. A.*, April 19, 1915.
- ³ Walker and Heller: *Ann. A. M. A.*, Feb. 12, 1916.
- ⁴ Weber: *Medical Record*, Oct. 8, 1901.
- ⁵ Senator: *Brit. Med. Jour.*, Jan. 27, 1908.
- ⁶ Beal: *Amer. Med. Journal*, 1905.
- ⁷ Drysdale: *Ann. A. M. A.*, July 29, 1911.

OBILITERATION OF LIVER DULNESS IN ACUTE PERFORATION OF THE STOMACH AND DUODENUM, WITH CASE REPORTS.

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It is a well recognized fact that acute perforation of the stomach or duodenum into the free peritoneal cavity is a very serious calamity and, unless relieved by operation, usually ends in death in a few days. It is also well known that early operation yields a high percentage of cures, and late operation yields poor results, even when skillfully performed. It is, therefore, logical to conclude that early diagnosis—which, indeed, is the only diagnosis worthy of study—is essential to surgical success. It is also reasonable to conclude that anything which will aid in establishing an early diagnosis is worthy of thought.

The average perforation presents a typical picture and one that is easy to interpret—history of stomach disorder, then sudden, severe pain in the epigastrium, immediately followed by signs of spreading peritonitis which manifests itself by general tenderness and boardlike muscular rigidity, the points of maximum tenderness being usually in the epigastrium and over the iliac fossae, especially on the right side. This is the classical picture and when it is present there is no need of further aid to diagnosis.

All cases, however, are not so typical. The history of indigestion may be absent; the pain may not be of the superlative type; and, above all, the rigidity may not be boardlike and general. Ulcer perforation, acute appendicitis, acute pancreatitis, intestinal obstruction, mesenteric thrombosis and even severe, non-surgical bellyache must, at times, be carefully differentiated. In this extremity, any available sign that may aid us will be appreciated.

There can be no doubt that the older writers on perforation laid too much stress on manifestations which occur late—fluid wave, abdominal distention, and rapid and thready pulse. Obliteration of liver dulness was considered almost a *sine qua non*. Even Mayo Robson, whose opinions always command respect, writing in Keen's Surgery says: "Liver dulness is generally absent."

At the present time, the pendulum seems to have swung entirely the other way, and leaders in surgical thought tell us that this sign is of little or no practical importance, being rarely or never present.

At a recent meeting of the Chicago Surgical Society, C. L. Gibson read a paper on gastric and duodenal perforation. He makes this statement:

"This symptom (obliteration of liver dulness) I have never been able to recognize in

any perforation of any kind of the gastro-intestinal tract, and I feel that it is a great pity that it is allowed to remain as one of the possibilities of diagnosis."

In discussing this point, Dr. A. D. Bevan said:—"You cannot wait to find free air in the peritoneal cavity obscuring liver dulness. I have never seen a perforating gastric or duodenal ulcer with that sign."

Dr. Cubbins stated that this sign was present only in moribund cases with greatly distended abdomen and paralytic condition of the abdominal muscles.

Dr. Deaver also states that this sign possesses little practical merit, and it is unfortunate that it is mentioned as a diagnostic sign.

These statements should not be allowed to go unchallenged. While it is indisputable that too much stress has been placed on the importance of this sign in the past, it does, however, possess real value and is worthy of consideration and study.

My excuse for reporting the following cases, in addition to my report of June 8th, is not so much to put on record further evidence of the occurrence of this sign, as it is to point out that it may be *positive early even in the presence of boardlike rigidity and a retracted abdomen*.

The writer is fully conscious that there is great variation in the extent and character of liver dulness, both in health and disease; therefore, the examination should be carefully made and good judgment exercised in the deductions drawn.

CASE 1. June 4, 1916. Mr. G. Age 24 years. "Indigestion," at intervals, for period of 3 years. Seized, suddenly, with intense pain in the abdomen about three hours after supper. Seen by writer about 4 hours after the onset of symptoms—pulse, 108; temperature, 99°. Patient was lying on his back with legs drawn up. Complained of severe pain. There was boardlike rigidity of the abdominal muscles and the belly wall was retracted. Tenderness was marked throughout, especially over the pyloric region. Liver dulness was replaced by tympany, both in front and in the axillary region. This point was demonstrated to the patient, who was a fourth year medical student. He, as well as those present, were satisfied that there was no doubt about obliteration of liver dulness. Operation was immediately performed. On opening the peritoneum there was escape of considerable amount of gas and bile-stained fluid. An indurated ulcer, with perforation at the base, was discovered in the first portion of the duodenum. The opening was closed with chromic gut. One drain was inserted to the ulcer site and the abdomen was closed in layers. Convalescence uneventful. Discharged well in three weeks. Normal percussion over liver at time of discharge.

CASE 2. Aug. 17, 1916. Mrs. W. Age, 62 years. Stomach trouble for past 20 years. Past 5 years under medical treatment, most of time. Past year had lost weight and strength very rapidly and cancer of the stomach was suspected. Vomited sev-

eral times daily, sometimes very large amounts, which contained food remnants of the day before. In the early morning was aroused from sleep by severe pain in the abdomen which persisted. Dr. W. J. Sheehan was called, who made the diagnosis of perforation. When seen by me the patient presented a fairly typical picture of this condition. Pulse, 96; temperature, 97.6°. The abdominal muscles were stiff but not rigid. There was general tenderness, which was most marked over the pyloric and right iliac regions. There was absence of liver dulness.

Operation was immediately performed (11 hours after perforation). On opening the peritoneum there was escape of air with a large amount of bile-stained fluid. The stomach was considerably dilated. A large perforated ulcer was disclosed at pylorus. The perforation was repaired and a posterior gastro-enterostomy with suture was performed. This was deemed advisable because of dilated stomach and long-standing history of gastric retention. Convalescence was uneventful. Has not vomited once since operation. Liver dulness normal on leaving hospital 18 days after operation. Has since been well.

SUMMARY.

1. The diagnosis of acute perforation can generally be made without the demonstration of free air in the peritoneal cavity, obliterating liver dulness.
2. In a certain percentage of cases, this sign may be a valuable aid to diagnosis.
3. Absence of liver dulness may be present early and with a rigid and retracted abdomen.
4. Instead of eliminating this sign as a diagnostic possibility, it should be given the consideration and study it deserves—and only that.

A STUDY OF THE X-RAYS OF CASES OF FRACTURE OF THE LONG BONES AT THE MASSACHUSETTS GENERAL HOSPITAL.*

By RUSSELL F. SHELDON, M.D., BOSTON.

A STUDY of x-ray plates at the Massachusetts General Hospital was undertaken in order to determine the frequency of fractures and the line of fracture in certain of the long bones. There is no record of the age of the patient on these plates. They represent, roughly, the period from 1902 to 1914.

Each plate was studied in a good light, and the line of fracture and the position of the fragments were marked on a prepared card. All plates not in a good state of preservation or not successfully made were rejected.

The long bones of the lower extremity form the basis of the present report. There are 57

*Dr. Walter Dodd and Dr. George Holmes, Roentzenologists to the hospital, and Dr. Charles Scudder greatly facilitated this study.

fractures of the femur, and 405 fractures of the tibia and fibula.

The following table shows the seat of fracture in the 57 plates of fractures of the femur:

Head	1	
Neck: Impacted	5	
Not impacted ...	5	10
Intertrochanteric	4	
		15
Shaft: Upper one-third	4	
Middle one-third	31	
Lower one-third	7	42
TOTAL		57

The study of the 405 plates of fracture of the tibia and fibula shows the seat of fracture to be as follows:

Upper end		
Tibia	8	
Fibula	1	
		9
Shaft		
Both bones	94.	or 23%
Tibia	32.	or 7.9%
Tibia, tuberosity	2	
Fibula	1	
		129
Malleoli or lower end		
Both bones	114.	or 28%
Tibia	44.	or 10.8%
Fibula	108.	or 26.6%
		266, or 65.4%
Multiple	1	
TOTAL		405

Of the 8 fractures of the upper end of the tibia, all entered the knee joint. The remaining case is a fracture of the upper end of the fibula, a rather unusual situation.

Of the 129 cases of fracture of the shaft of the tibia and fibula, division according to region is as follows:

	BOTH	TIBIA	FIBULA
Upper third	10, or 7.7%	1	0
Middle third	42, or 32.5%	26, or 20%	1
Lower third	42, or 32.5%	5, or 3.8%	0
Tuberosity	0	2	0
TOTALS	94, or 72%	34, or 26%	1

The 266 cases of fracture of the lower end of the tibia and fibula are best grouped as Pott's fractures. Thus of the 114 fractures of both bones, 111 are variants of the so-called Pott's type, the internal malleolus of the tibia being fractured, with the fracture of the fibula anywhere in the lower four inches. In the remaining three cases the fracture of the tibia is more extensive, for, in addition to the malleolus, a part of the lower end of the shaft is also fractured.

The 44 cases of fracture of the tibia alone, and the 108 cases of fracture of the fibula alone, were

undoubtedly due to less severe trauma than the 111 cases of fracture of both bones. Thus, of the 44 cases of fracture of the lower end of the tibia alone, 40 involve the internal malleolus only. The remaining four cases involve more of the shaft, and may represent the type recently described by Cotton.

The 108 cases of fracture of the fibula alone show the line of fracture to be anywhere in the lower four inches of the shaft.

This study of the x-ray plates gives a definite impression of the frequency of the occurrence of fracture of certain bones. One ordinarily has a vague impression of the incidence of fracture of bone. Here is presented a positive picture.

Harvard Infantile Paralysis Commission.

THE HARVARD INFANTILE PARALYSIS COMMISSION AND ITS WORK IN MASSACHUSETTS.

BY ROBERT W. LOVETT, M.D., BOSTON.

THE Harvard Infantile Paralysis Commission was appointed in September, 1916, to furnish aid to the physicians in the neighborhood of Boston in the early diagnosis of the affection by laboratory methods and to place at the disposal of those physicians who cared to have it used, a supply of immune human blood serum which in the New York epidemic of the early summer had been extensively used and had been favorably reported on.

The commission consisted of Professor Milton J. Rosenau, assistant Professor Francis W. Peabody and the writer, with Mr. Roger Pierce as secretary.

Immediately after the formation of the commission there began a demand for its services in diagnosis and early treatment and this work was conducted under the supervision of Dr. Peabody. In October the commission was requested by the State Commissioner of Health, Dr. Allan J. McLaughlin, to act as the agent of the State Department of Health in supervising the after-care of the paralyzed children in Massachusetts. With the approval of the university authorities the commission consented to undertake this work. At the same time it became evident that another and most important aspect of the situation was in great need of study, and that the commission must also consider and investigate the question of the cause and prevention of the disease.

These three aspects of the question then constitute the activities of the commission. First, diagnosis and early treatment, under the immediate supervision of Dr. Peabody; second, the study of the etiology of the disease with especial

regard to its prevention, under the charge of Dr. Rosenau; and third, the after-treatment of paralyzed children, under the direction of the writer. Mr. Pierce has been concerned with the administrative and financial side of the various problems, and the commission has met frequently alone and with Commissioner McLaughlin to consider the various activities belonging to it.

In November, Dr. William H. Coon was secured as the administrative officer of the commission to correlate its activities, to supervise the many details arising in its work and to meet its most pressing present need in arranging for the after-care of patients.

The financial resources of the commission are very slender and wholly inadequate for any work of which Massachusetts will be proud. Thirty-five hundred dollars have been raised by private subscription. Six thousand dollars were anonymously contributed to maintain an adequate special clinic at the Children's Hospital for one year. Five thousand dollars were contributed for the use of the State Department of Health from the Governor's contingent fund.

It is obvious that if the work is to be adequately carried on it must receive adequate financial support. The four members of the commission receive no salary and for its various activities no charge is made. Overhead expenses are largely eliminated by the generosity of the Harvard Medical School, the Peter Bent Brigham Hospital, the Children's Hospital and the Massachusetts General Hospital. The money contributed to furnishing early state care is directly expended on this care and in few directions will a reasonable amount of money accomplish more direct relief.

The present paper will deal only with one of the three branches of activity, namely, the after-care of paralyzed children.

The following point of view with regard to the principles which should govern the modern treatment of this stage of the paralysis has been presented by the writer to the commission, and has by them been adopted as in general terms the plan to be carried out. It is as follows:

Infantile paralysis causes a motor impairment which in many cases limits normal activity and in others causes serious and lasting disability. The critical time is not in the first two or three months after the attack, but in the subsequent months up to the end of the second year, during which period the question of ultimate function in most cases is determined by the treatment received. Certain cases are so lightly affected that they will recover no matter what treatment is pursued, others are so severely paralyzed that no treatment is of much avail, but in the majority of cases treatment at this time has great effect on the final amount of restoration of power.

Neglect or ineffectual treatment during this time means unnecessary crippling and disability

to so large a number of children that it is an economic blunder to allow it to happen, aside from any humanitarian aspect that the matter may have.

The state care of infantile paralysis was instituted in Vermont in January, 1915, and is still in force there. It was begun by the state of New York (exclusive of New York city) in October, 1916, and by Massachusetts, where the epidemic began later, in November, 1916. Various cities have established clinics for the care of these cases and various other communities have under consideration schemes of public care. The situation is too serious to be met by the ordinary agencies of relief.

The treatment of the acute stage of poliomyelitis is effectively and thoroughly carried out in a modern way by the practitioners of Vermont, New York, and Massachusetts, the states of which I have first-hand information. The later operative treatment of the disease is, on the whole, also modern, efficient and surgically sound as carried out by the competent orthopedic surgeons of the United States. The treatment of the convalescent stage of the disease (from the disappearance of the tenderness until two years after the outset) is practically about what it was thirty-five years ago, not having changed as has the treatment of the early and late stages. Massage, electricity, and braces are the methods of treatment most in vogue in the United States today during this stage.

The essentials of a modern treatment of this stage are, first, an accurate diagnosis which can be made only by a careful examination of every available muscle or muscle group in both arms, both legs, back, neck, and abdomen. This is a perfectly obvious requirement for accurate treatment. It takes time, care, anatomical knowledge, and skill. Second, the aim of treatment should be the development of affected muscles to their highest ultimate efficiency. The Vermont figures have shown that partial paralysis is nine times as common as total, when muscles are carefully examined individually. The affection is not therefore so often a hopeless loss of power as a muscular weakening. This lays stress on muscular development as the keynote of treatment. Third, the use of braces is conservative and protective rather than therapeutic, and the "brace treatment" of this stage does not exist any more than does a "crutch treatment" of fracture of the leg. Braces must be used in many cases to enable patients to go about, to prevent muscular stretching, and joint loosening, and to avoid deformity, but they constrict the muscles, they prevent normal use of the limb, and they are heavy. They should be worn during the first year only for walking and removed when the small amount of walking which is safe at this time has been done.

Fourth, fatigue is detrimental, easily induced and delays muscular recovery. The power of weak muscles may be permanently destroyed by

overuse, and unprotected overuse may result in muscular stretching and permanent deformity. The overuse of massage and therapeutic exercise is capable of inducing harmful degrees of fatigue. The physician who allows unrestricted walking with or without a brace in the first year takes on a heavy responsibility.

Fifth, massage is useful in proper dosage in preserving muscular tone, promoting circulation and preventing muscular atrophy. Its overuse is dangerous.

Sixth, electricity given with mild currents does no harm and perhaps good, but is not a powerful remedy, and its benefit has been denied by some writers. It has done much harm by being used over long periods of time, often none too carefully, during which no other treatment has been pursued and the parents have been deluded into the belief that proper treatment was being given while valuable time was being lost and permanent deformity being acquired.

Seventh, muscle development by muscle training is the important part of the modern treatment. Loosely given, it is harmful, because a child will inevitably use strong rather than weak muscles in a loosely formulated movement, and the person prescribing such exercises must have a sufficient knowledge of functional anatomy to formulate exercises calling only on the weak muscles. This knowledge is not as a rule possessed by the ordinary masseuse. Therein lies the chief obstacle to the general use of the method, the scarcity of persons sufficiently trained to prescribe proper exercises, and the formulation of such muscular exercises by persons not specially trained to give them effectively.

To embody these requirements in a practical scheme the following plan has been adopted by the commission.

Clinics are held in Boston and in other parts of the state where physicians may bring their patients for examination and free consultation. These clinics are so arranged that each patient receives as much time as is necessary for the thorough examination of the case and the formulation of treatment. Specially trained women are to serve in Boston and other parts of the state to assist the family physicians, if they wish it, in carrying out muscle training at home, in seeing that apparatus is worn if ordered, that fatigue is avoided, that the physician's directions are followed, and that the patients do not fall into the hands of fakirs.

So far as possible each family is enlisted in the responsibility of the case. When she is intelligent, the muscle training is taught to the mother and supervised by the nurse. Coöperation has been arranged with the District Nursing Association and other similar organizations whereby the follow-up work is distributed and the care assisted by them under the technical supervision of the commission's nurses.

The patients are instructed to return to the clinics at intervals suited to the individual case, but it is intended to make the home care the main feature of the scheme, and this plan is intended to cover a sufficient number of years to obtain final results.

It is desired to work only through the family physician, to assist and not to supersede him and to furnish him with the record of each case and suggestions for treatment whether or not he is present at the clinics.

The central clinic of the commission is held at the Children's Hospital on Tuesdays, Thursdays, and Saturdays at nine o'clock. With this clinic coöperates the Orthopedic Clinic of the Massachusetts General Hospital, held each morning at nine o'clock. To the latter clinic are referred all adult cases and patients from the north and west ends, East Boston, and Charlestown.

For groups of cases who cannot easily come to Boston, the Children's Clinic unit will be transported direct to such centres in the State as desire to have it, at the direction of the Commissioner of Health. Such clinics in out-of-town centres will be repeated at sufficient intervals to afford proper follow-up care. In these outside centres, just as in Boston, trained women will be assigned to the supervision of the treatment of such cases under the direction of the family physician. The service of the outside clinics and of the follow-up care is without charge. It is not the intention of the commission to attempt to establish clinics in any locality maintaining private clinics for the purpose.

The aim of the commission is to furnish to those physicians who wish it assistance in carrying out the modern treatment of infantile paralysis with the hope that by so doing the whole standard of treatment may be raised and that Massachusetts may hold as prominent a place in the therapeutic side of this disease as it already holds as a pioneer in the study of its etiology. For this purpose funds must be contributed, and it would be desirable if, so far as possible, independent schemes of relief might be correlated to the main enterprise.

Clinical Department.

A REPORT OF AN UNUSUAL CASE OF UMBILICAL HERNIA.

By JOHN W. LANE, M.D., Boston.

THIS case is so rare and unusual and its outcome so satisfactory that I deem it worthy to report.

Mrs. B., seen June 27th, 1916, with Dr. Geo. P. Morris of South Boston. There was nothing in

the family history to throw any light upon the case. The past history was negative, save for the fact that the patient had suffered for several years from a small incarcerated umbilical hernia.

The present illness began June 24th, and was ushered in by a severe pain in the mass at the umbilicus. This pain persisted until June 26th, when it suddenly ceased. During this time the patient vomited nearly twenty times, but whether the vomiting was faecal, was not known. On the evening of the 25th the vomiting ceased and there were several evacuations of the bowels following a dose of citrate of magnesia. On June 26th a redness and tenderness appeared about the umbilicus and the hernial mass disappeared. On June 27th the area of redness had extended, and was very much more tender.

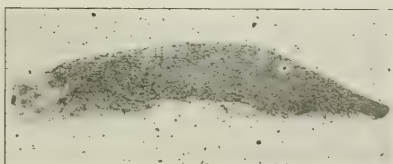
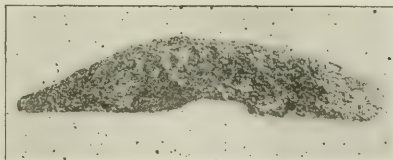
The physical examination showed a well developed, and rather stout woman, about fifty-two years of age. The examination was generally negative except for the abdomen. The abdomen was somewhat obese and was not distended but lax and tympanitic. There was no protrusion at the umbilicus but the depression, thereof, was unusually large and surrounded by an area of redness and tenderness and ingurgitation about six inches in diameter.

The patient entered St. Margaret's Hospital on the evening of June 27th, and was operated on the following morning under ether. As the greatest redness was below the umbilicus a vertical incision about three inches long was made below the umbilicus, and at a depth of 1-1.2 inches in the fat about two ounces of foul smelling pus was evacuated. The pus had an odor characteristic of an appendix abscess. After the excess pus had been wiped out, there appeared in the upper end of the wound a red mass about the size of a lemon.

On enlarging the wound this appeared to be the sac of a hernia with a rent about 1-2 inch in diameter. In the left lower border protruding from this rent was a sharp, hard, foreign body. The rent in the sac was slightly enlarged upward and a finger being introduced cautiously, came in contact with a loop of small intestine. The foreign body was seized in a hemostat and withdrawn and found to be a piece of animal bone, 1 7/8 inches long and 3/8 inches wide, as per illustration. Further inspection revealed a piece of small intestine strangulated in the sac, reddened but not gangrenous and showing a perforation of 1-4 inch in diameter, with its mucous membrane everted. The perforation in the gut was closed with interrupted plain cat gut sutures, in two layers. In the presence of so much infection it was not deemed advisable or safe to attempt a radical cure of the hernia, but the abdominal ring was enlarged slightly to relieve the strangulation and no effort was made to return the bowel into the abdominal cavity. Cigarette drains were placed around the sac and a large dressing applied.

The patient made an uneventful convalescence, save for a slight faecal discharge which entirely ceased by July 9th. On July 12th the patient was discharged from the hospital, the wound being clean and granulating and at the upper angle showing the mass of the sac almost on the level with the skin. On July 19th the patient's husband reported that the wound was almost healed and that she was out of doors taking a little exercise.

A report from the patient's physician, a few weeks ago, shows her to be perfectly well.



This case is unique almost, in that there was a perforation of a strangulated hernia by a foreign body. This foreign body was probably a piece of animal bone, looking more like a piece of spare rib. The patient had no recollection of swallowing any foreign body or of having any difficulty in swallowing at any time, yet it would seem almost impossible for her to swallow a piece of bone of such size without much trouble.

Another remarkable feature of the case was that the bowel practically disappeared within the abdominal cavity and in spite of the presence of so much pus, produced no general peritonitis.

RINGWORM OF THE SCALP AND ALOPECIA AREATA APPEARING SIMULTANEOUSLY IN THE SAME LOCATION.

BY JOHN E. LANE, M.D., NEW HAVEN, CONN.

THE following case is of some interest on account of its possible bearing on the explanation of the cause of some of the epidemics of alopecia areata, which are occasionally reported.

I. C., an Italian boy, five years old, was seen for the first time at the Dermatological Department of the Yale University Clinic, on March 20, 1916. At the center of the nape was a bald spot, of about five centimeters in diameter, with a slightly irregular border. The skin was smooth, white and completely depilated, with the typical appearance of alopecia areata in one of its favorite locations. A more attentive examination disclosed the fact that there was considerable scalliness of the border on the side of the spot towards the scalp. Some of the scales were removed and examined microscopically. In them were found large numbers of typical ringworm fungi.

The question then presented itself, whether this was a case of the not very infrequent "bald ringworm" (Tinea) or "tinea decalvans" (Tillbury Fox), or whether it was a spot of alopecia areata

with a concomitant ringworm infection. I was unable to settle this point to my own satisfaction at this visit, but it was decided somewhat later by the course of the disease.

For a short time the spot increased a little in size and the scaly border and fungi disappeared with very little treatment in the course of a couple of months, and the spot began to be covered with hair again. This rapid cure of the ringworm without the development of any new areas, strongly suggested that the depilation which had taken place was due to the alopecia areata, inasmuch as it was as efficient in curing the ringworm as an application of a suitable dose of the x-ray would have been. Complete confirmation of this diagnosis came about a month later, when a new spot of typical alopecia areata appeared a little to the right of the location of the first spot.

Book Reviews.

The Essentials of Chemical Physiology. For the use of students. By W. D. HALLIBURTON, M.D., LL.D., F.R.S., Fellow of the Royal College of Physicians, Professor of Physiology in King's College, London; author of "Text-Book of Chemical Physiology and Pathology." Ninth edition, with colored plate. London and New York: Longmans, Green & Co. 1916.

To those of us who received our first instruction in this little book, a new edition, including all of the advances in biochemistry, is extremely welcome. Holding a place between a quiz-compend and the larger and more extensive works on this subject, it fills a very active need of students.

The experiments to be performed are stated in very simple language, are not complex, and so complete that even a beginner without other knowledge than that of the use of chemical apparatus ought to be able to conduct them successfully. Organic chemistry, too, in so far as it is necessary for the understanding of biochemical processes, is quite fully treated. The aldehydes and ketones, the ethers, the amino-acids and aromatic compounds so commonly occurring in physiological processes are fully considered and clearly described.

The chapter devoted to fats contains all the newer information which we have acquired by investigations regarding the lipoids, galactosides and phosphatides.

The classification of proteins, which the author refers to as simply provisional, because we are daily learning more and more with reference to their structure, follows that adopted in the larger works. A very valuable chapter on foodstuffs is incorporated in the volume, which

contains a brief but accurate report on the progress of our knowledge of vitamins.

In a work, however, which is supposed to be devoted to biochemistry, the description and plates of glands producing the different secretions seem out of place and indicate that the author is primarily a physiologist.

The chapter on blood is rather brief and contains practically none of the newer investigations which have been conducted on the importance of variations of the amount of urea, uric acid, sugar, and creatin, which are revolutionizing our methods of testing for pathological changes in the body by means of the blood.

On the whole, we may regard this work as playing a very important part in the instruction of students, but rather too brief for the needs of anyone engaged in a thorough prosecution of any line of investigation.

Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes. By

CHARLES A. ELSBERG, M.D., F.A.C.S., Professor of Clinical Surgery at the New York University and Bellevue Hospital Medical College; Attending Surgeon to Mount Sinai Hospital and to the New York Neurological Institute. With 158 illustrations, three of them in colors. Philadelphia and London: W. B. Saunders Company. 1916.

An attractive book of 300 pages, profusely and most liberally illustrated; easy to read, because of large type and wide spacing; easy to hold, because it is not too bulky; and interesting from cover to cover, because, as Dr. Elsberg says in his preface, the "volume is a record of personal experiences in the surgical treatment of diseases and injuries of the spinal cord and its adnexa," and because he has limited himself rigidly to "a consideration of the diagnosis and treatment of diseases of the spinal cord that may require surgical interference."

We have referred to the illustrations: there are no less than 150 of them; many half-tones; many excellent reproductions of x-ray plates; a number of diagrams, and two admirable colored plates illustrating the difference between the spinal veins in inflammation and the spinal veins in compression. The illustrations, as a rule, take half a page, and occasionally a whole page, so that the text is not more than 200 pages, and probably less. Emphasis is laid upon this fact, because the tendency at present seems to be to make medical books too long: either the writer over-elaborates his subject, or else he does not remain in the field which he originally set for himself. Dr. Elsberg avoids both these dangers: he speaks with highest authority and from a very wide experience; his book is unlike anything heretofore published in America, and it should be in the hands of every surgeon who may be called upon to explore the spinal cord.

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WORK OF THE HARVARD INFANTILE PARALYSIS COMMISSION.

PARTICULAR attention is directed to the article by Dr. Robert W. Lovett, published in this issue of the JOURNAL, describing the work already accomplished by the Harvard Infantile Paralysis Commission in Massachusetts and its plans for the future, and also to the note on the same subject published in another column. The promptness with which this commission was organized and the efficiency with which it has set about and already carried out its duties are a credit not merely to the profession, but to the public spirit and farsightedness of the university in its organization. The immediate task of the commission is, during the succeeding months, to reach and undertake the care, or to give advice in its maintenance, of the residual paralysis left in the community of this Commonwealth by the epidemic of last summer and fall. The duty of the commission, however, will not cease when this is accomplished. Indeed it seems

that its early and immediate success justifies the wish and expectation that it may remain as a permanent body to serve as a clearing house and center for the investigation and control of the disease during subsequent epidemics that are likely to occur until the discovery of its exact mode of transmission shall place it in the category of completely understood and preventable diseases. Subsequent publication of the complete proceedings and accomplishment of this commission should prove a valuable and historic contribution to the literature of medical science.

INDUSTRIAL HEALTH INSURANCE.

SINCE the publication of its issue of December 21, 1916, devoted to the subjects of Workmen's Compensation, Industrial Health Insurance and Social Legislation, the JOURNAL has received and printed with pleasure a number of communications criticizing unfavorably not only the subject material of this issue, but also the editorial policy which it then assumed. To these communications the attention of readers is particularly directed, since they afford very valuable contributions to that discussion of the subject which is desired by the JOURNAL in the interests of the medical profession, and the most effective means for determining the attitude of the profession at large on this important subject. Since the writing of several of these contributions, especially those opposing the Doten bill, which was published in our issue of Dec. 7 by special request of the health insurance committee of the Middlesex South District Medical Society, the JOURNAL has editorially noted that this bill in any event is generally considered, even by the proponents of health legislation, unsatisfactory in its medical provisions and will not be brought before the coming General Court unless in radically amended form. Not only is the subject under careful consideration by the Massachusetts Commission on Industrial Insurance, but the general committee of the Massachusetts Medical Society on state and national legislation and a special committee on Workmen's Compensation are engaged in active sessions for discussion of the subject and formulation of a definite plan of action.

Meantime in New York the council of the Medical Society of the State of New York has endorsed the provisions for medical benefit in a

new draft of an act for health insurance prepared by the American Association for Labor Legislation. The council states its belief that these sections "safeguard the public interest, the public health and the welfare of the medical profession," and has instructed its committees on medical economics and on medical legislation to act accordingly.

The new sections specifically provide for a state medical advisory board to be elected by the state medical societies and to include in its membership the state commissioner of health as an *ex-officio* member. With its powers to pass upon regulations issued by the State Commission affecting medical benefit, and to hear and report upon disputes appealed to the commission, this advisory board will reflect the viewpoint of both the department of health and the medical profession. In local matters, much the same advantages accrue from the local medical committee which discusses local medical regulations before they are made effectual by the directors of the local fund, and hears cases of disagreement relating to medical benefit. The representation on this committee of different groups—health department, general practitioners and specialists—is a foresighted measure for the maintenance of a just balance among the varying medical interests. The appointment of a delegate from the health department to this committee is an important provision since it secures the correlation of health insurance with the public health work.

Profiting by European experience, provision has been made for separating the two distinct functions of certifying an insured person as eligible for benefit and of actually treating him. Medical officers, not permitted to practice under the act, alone have authority to issue certificates of disability after the attending physician has recommended such action. The suggestion that the health department furnish these medical officers has been rejected as impracticable. Instead, the qualifications of candidates for such positions are to be set by the medical advisory committee elected by the state societies, while the actual appointments will be made by the local boards, subject to the veto of the local medical committee. It seems just that the local boards exercise control over the medical officer and have power to dismiss any who may prove negligent in passing upon claims of persons whom physicians have recommended for cash benefit. Moreover, the power to be exercised by the local medical committee should assure that the

medical officer will have the support and confidence of those with whom he will be associated.

The advantages claimed for this new draft of the Health Insurance bill in New York are, that it makes health insurance universal for all manual workers and for others earning \$100 or less because experience elsewhere has shown that voluntary insurance will not reach the persons who most need its protection and that insurance must be obligatory if it is to render the large social service of which it is capable. It is believed that the distribution of the cost of the benefits and of their administration is equitable. This administration, however, we firmly believe should be vested in mutual associations comprising representatives not merely of employers and employees but also of the state and of the medical profession. The welfare and working conditions of physicians are so importantly affected by any scheme of health legislation that not only should they be collectively represented in its formulation and administration, but the ultimate working of the system should be in some way efficiently correlated with the control of state and local health departments. The experience of an adjacent state, such as New York, in dealing with these problems, should be attentively watched by physicians in order that the medical profession of Massachusetts may profit by it in determining its own course of action.

A TRILOGY OF HEALTH REPORTS.

WE have recently received, almost simultaneously from Washington, the annual reports of the Surgeons General of the United States army, navy and public health service for the year 1916. This trilogy of health reports deserves simultaneous comment and comparison.

In the issue of the JOURNAL for December 14, 1916, (Vol. CLXXV., p. 875) we commented editorially at some length on the then recently published annual report of the Secretary of the United States Navy, calling attention particularly to its sections dealing with health and sanitation in the navy.

These subjects are expanded and elaborated in the report of the Surgeon General, Dr. W. C. Braisted, who, in addition, comments on the fact that, despite the employment of venereal prophylaxis, the total admission rate for these diseases has shown but little change over the preceding years.

The report of the Surgeon General of the United States Army, made by the acting Surgeon General, Dr. H. P. Birmingham, covers a study of the health and sanitary conditions of the army for the year 1915, and therefore does not include the data and comment connected with the mobilization of the Army and National Guard at the Mexican frontier last summer. During this period the general health of the army was excellent and there were no epidemics or unusual incidence of infectious diseases. The death rate of the entire army for 1915 from all causes was 4.45 per thousand compared with 4.4 for 1914, which was the lowest mortality rate in the army for many years. There were only eight cases of typhoid fever in the entire army during the entire year and among these there were no deaths. A brief account is given of the punitive expedition into northern Mexico in March, 1916, during whose several months of arduous service under trying climatic and unsanitary conditions a remarkable record of health and efficiency was maintained. The non-effective rates of this force compared favorably with the best of home troops under garrison conditions. A brief note is also appended relative to the mobilization of the National Guard in June, 1916, which will be more completely considered in the annual report of next year.

The annual report of Dr. Rupert Blue, Surgeon General of the United States Public Health Service, covers the activities of that service for the fiscal year ended June 30, 1916, being the forty-fifth annual report of the service and the 118th year of its existence. As heretofore these activities have been conducted under the six bureaus of scientific research, foreign and insular quarantine, domestic quarantine, sanitary and statistics, marine hospitals and relief and personnel and accounts. Especial attention is devoted to the work of the service in the diminution and eradication of preventable disease.

"Practical application of the knowledge that pellagra is caused by restricted diet and that it may be prevented and cured by a properly balanced ration has resulted in the last year in material reduction of the affliction in all parts of the country. The service believes that in another year even more marked improvement will be observed.

In eradicating trachoma, likewise, much success has been obtained. During the year 1700 persons were operated upon for the relief of partial or complete blindness, nearly 2000 received hospital treatment, while more than 19,000 were treated at hospital dispensa-

ries and clinics. The total cost of this, including remodelling of buildings and every expense in connection with feeding and care of patients, was less than \$39,000 for the year.

Increased interest was shown by the government in health of rural dwellers. During the last three years 80,270 homes in thirteen States were visited and complete sanitary surveys made. In every instance definite recommendations were given to remedy such evils as pollution of wells, presence of disease-bearing insects and improper disposal of excreta. In addition 22,234 homes were revisited, mostly at the request of the owners, in order that the government agents could inspect improvements instituted. This method of teaching sanitation has been followed by a marked reduction in prevalence of preventable diseases.

Considerable attention has been given to health of school children, especially in rural districts. Over 32,000 children had determined their mental status and the causes and percentage of mental retardation and deficiency. In addition 7,000 physical examinations were completed to determine physical defects.

Health of industrial workers has been safeguarded to a greater extent than ever before. Studies have been made of the occupational hazards of steel workers in many leading industrial establishments and insanitary and harmful conditions have been corrected. In the zinc mines of Missouri, methods have been adopted which should go far toward eradicating tuberculosis from that district.

Surveys of the Atlantic coast and New England watersheds have been completed and the extent and effect of their pollution is now known. This knowledge, says the report, demonstrates that Federal legislation to prevent contamination of water sources is necessary. Better provision for health of travellers has been obtained by safeguarding water supplies of common carriers and by promulgating regulations governing transportation of persons having communicable diseases.

Efforts have been made to prevent introduction of all communicable diseases. Typhus fever has been combated on the Mexican border and disinfection plants established where the clothing and persons of all incoming aliens have been disinfected. At El Paso, Texas, 26,000 persons were disinfected.

Plague eradication measures at New Orleans have been continued. Over 371,000 rodents were trapped or killed and more than 100,000 were examined. No human case of the disease has occurred during the year. Measures for the control of typhoid fever, Rocky Mountain spotted fever and malaria and other infections have been continued heretofore. In only a single field, the surgeon general reports, the medical inspection of immigrants, has the work of the service shown any diminution during the year. This has been compensated for by the

more thorough examination accorded; 481,270 aliens being examined to determine physical and mental defects. Of these 16,327 were certified for deportation, proportionately a greater number than has ever been recorded. The percentage of mental defectives certified is also steadily increasing."

MEDICAL NOTES.

DEATHS FROM WILD ANIMALS IN INDIA.—It is not generally realized how large a number of deaths is caused annually in India by wild animals. Report from Simla on November 30 states that during the year ended June 30, 1916, 26,385 persons died in India from snake bite, an increase of 3700 over the previous year. Over 2000 more deaths were caused by elephants, tigers, and other animals.

"During the past five years elephants, tigers and other animals have killed 9192 people in British India, and, of these, tigers have claimed a total of 3682. In the same period 116,828 persons have died as the result of snake bites.

Last year the highest total of deaths due to animals in any one province was in Bihar and Orissa, where 684 people lost their lives, tigers alone accounting for 376. In the United Provinces one man-eating tiger in the Almora district killed ten persons out of the provincial total of twenty.

In order to effect the destruction of as many wild animals and snakes as possible, the Government pays bounties. The number of animals destroyed in 1915 was 25,036, including 1582 tigers, 6623 leopards, 2775 bears and 2191 wolves. The total number of snakes killed was 184,663."

EUROPEAN WAR NOTES.

MEDICAL STUDENTS IN AUSTRIAN UNIVERSITIES.—Statistics recently published show that during the summer semester of 1916, the number of students in the principal Austrian universities was as follows: Vienna, 3472; Prague, Czech University, 1891, German University, 638; Cracow, 1281; Lemberg, 1174; Graz, 647; Innsbruck, 584. At both Vienna and Graz 30% of the number were medical students; at Vienna nearly 40% of these medical students were women.

COORDINATION OF WAR RELIEF WORK.—At a meeting held in New York on December 27 it was planned to coordinate the relief work done by American organizations in belligerent European countries in the hands of a general governing body and to initiate a movement to secure a fund of \$100,000,000 for its work. A committee on organization for this purpose

was appointed by the representatives of twelve philanthropic organizations concerned.

"John M. Glenn, director of the Russell Sage Foundation, was one of those appointed to the committee. Others were Dr. Charles B. MacFarland, general secretary of the Federal Council of the Churches of Christ in America; Miss Fannie Hastings, secretary of the Serbian Relief Committee; C. V. Vickery, executive secretary of the American Committee for Armenian and Syrian Relief, and Dr. Frederick Lynch of the Fund for Starving Children.

It was evident from the character of the organizations represented at the meeting that the movement to federate war relief is being fostered by powerful agencies and will be brought to a successful conclusion, if the many interests achieve harmonious relations.

Following are some of the organizations: American Relief Committee for Widows and Orphans of the War in Germany, John D. Crimmins, treasurer; B. F. B. Permanent Blind Relief War Fund, Frank A. Vanderlip, treasurer; the Fund for Starving Children, Frederick Lynch, treasurer; the American Huguenot Committee, Edmond E. Robert, treasurer; Commission for Relief in Belgium, Alexander J. Hemphill, treasurer; East Prussian Relief Fund, Subert Cillis, treasurer; Joint Distributing Committee, consisting of American Jewish Relief Committee, Central Relief Committee of America, Murray E. Coggeshall, treasurer; Union Nationale Des Eglises Reformées Evangéliques de France, Emergency Relief Fund, Alfred R. Kimball, treasurer; Polish Victims' Relief Fund, Frank A. Vanderlip, treasurer, and the Federal Council of the Churches of Christ in America."

NEEDS OF AMERICAN RED CROSS IN EUROPE.—The American Red Cross has recently issued a statement indicating the particular needs for articles of relief in the various belligerent European countries as follows:

"Albania and Montenegro—Money contributions are needed for civilian relief, to be used as soon as the opportunity for administering relief presents itself.

Armenians and Lithuanians—The Armenians in the Caucasus can be reached at Tiflis via Archangel or Kola. The Christmas ship which just sailed for Beirut carried a good supply for the Armenians in Syria. Supplies can be forwarded to the Lithuanians by way of Russia. The greatest present needs are for new warm clothing, blankets and drugs.

Austria, Bulgaria, Germany and Turkey—Supplies cannot be forwarded to the Central Powers at the present time on account of the British blockade.

Belgium—The headquarters of the Belgian Red Cross are at Calais, so that supplies are

forwarded via France. Among the most urgent needs are surgical dressings, pajamas, underwear, children's clothing, and food-stuffs.

England—A letter has just been received from the British Red Cross asking for pajamas, socks, sheets, pillows, and absorbent cotton and gauze in bulk.

France—The following supplies have been asked for in recent cables from Paris: Rubber gloves; hot water bottles, invalid rings, rubber sheetings, pajamas, ether, absorbent cotton, surgical gauze and underwear.

Italy—Urgent requests from the American Relief Clearing House, Rome, and from the Italian Red Cross include the following: Rubber gloves, sheets, cushions, rubber hot water bottles, bandages, absorbent cotton, and clinical thermometers.

Poland—Money contributions are the most acceptable, because it is impossible to get supplies into Poland.

Roumania—Supplies may be forwarded by way of Russia, and the most urgent needs include the following: Chloroform, iodine crystals, rubber gloves, adhesive plaster, hypodermic syringes, ligatures, and sutures, needles, and all kinds of surgical dressings and bandages.

Russia—The greatest need in Russia is for drugs and medicines, but hospital supplies and hospital garments can be used in large quantities.

Serbia—Supplies for the Serbians are now going via Marseilles, and then trans-shipped to Salonica.

Siberia—Warm underwear, socks, sweaters, drugs and medicines are the special needs among the prison camps in Siberia.

Syria—Money contributions only should be made for Syrian relief.

The following note as to the method to be followed in making Red Cross gifts is appended to the statement:

The American Red Cross will deliver, without further cost to the donor beyond delivery to the Bush Terminal, any amount of supplies, large or small, to the National Red Cross of the country for which they are designated or to any other recognized relief organization in the war zone. Funds donated for special objects will be administered accordingly.

All funds should be made payable to the American Red Cross and mailed to 1624 H street, N. W., Washington, D. C. All supplies should be sent prepaid to the American Red Cross, Bush Terminal, Brooklyn, N. Y., and a letter covering cash shipment mailed to the American Red Cross, 1 Madison Avenue, New York City."

PROVISION FOR CARE OF CANADIAN SOLDIERS.—Report from Halifax, N. S., on January 2 states that owing to the present overcrowded

condition of military hospitals in Great Britain, it is impossible to care adequately for wounded Canadian soldiers there. Accordingly it is planned to increase hospital facilities in Canada for this purpose.

"The Military Hospitals Commission already has arranged for the conversion of one of the large piers of the new steamship terminals into a clearing hospital with a capacity of 450 beds.

Under the direction of Capt. Symons, chief engineer of the commission, a force of 40 workmen has been started on night and day shifts to hasten its completion.

Other structures nearby are being inspected to determine their availability for similar purposes. As the new hospital is to be a clearing institution, it is understood that others will be arranged in different parts of the Dominion, to which patients may be forwarded."

WAR RELIEF FUNDS.—On Jan. 6 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$226,811.47
French Wounded Fund	177,170.79
Armenian Fund	136,548.91
Serbian Fund	106,302.51
French Orphanage Fund	73,769.29
Surgical Dressings Fund	59,619.62
Polish Fund	57,096.30
LaFayette Fund	21,554.03
P. S. D. Fund	10,585.18
French Phthisis Fund	7,489.50
French Musicians' Fund	976.47

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday noon, Dec. 30, 1916, the number of deaths reported was 259, against 393 for the same period last year, with a rate of 17.72 against 27.38 last year. There were 29 deaths under one year of age, against 63 last year, and 76 deaths over 60 years of age, against 127 last year.

The number of cases of principal reportable diseases were: diphtheria, 76; scarlet fever, 30; measles, 45; whooping cough, 2; tuberculosis, 29.

Included in the above were the following cases of non-residents: diphtheria, 28; scarlet fever, 13; measles, 1; tuberculosis, 3.

Total deaths from these diseases were: diphtheria, 5; tuberculosis, 29.

Included in the above were the following deaths of non-residents: diphtheria, 1; tuberculosis, 2.

CHICKERING HOUSE.—The Dedham Temporary Home for Women and Children, called Chickering House, has recently issued its annual report for the year 1916. It states that the House has been filled to its capacity and that repairs and

additions have been made during the year to improve the condition of the buildings and increase space wherever possible. These expenses, with the added cost of food and wages, have made imperative added subscriptions, and it is to be hoped that the many friends of this most worthy and useful home for convalescents will support it in the manner it deserves. Subscriptions and donations may be sent to Miss Annie E. Wilson, 161 Harvard Street, Brookline.

CAMBRIDGE TUBERCULOSIS HOSPITAL.—On January 1, the new building of the Cambridge Tuberculosis Hospital was formally opened for inspection and patients were transferred to it on January 8.

"It is a brick structure of the Georgian type. The administration section is in the center of a wide courtyard facing due south and inclosed by projecting wings. In each of these wings are two wards of 10 beds each, two small wards of two beds and a single ward. Connected with these wards are diet kitchens, equipped with the latest devices. A complete signal system runs from each bed and from each ward to the various parts of the building. Wide piazzas, upon which beds can be rolled, enable the patients to pass much of their time in the open air. At the end of the wings is a solarium. The second floor of the wing is similar to the first floor."

AESCULAPIAN CLUB.—Invitations are issued for the midwinter dinner and meeting of the Aesculapian Club, which will be held at the Harvard Club on Saturday, January 13, 1917, at 9 p.m. There will be an address by Prof. William H. Welch of Johns Hopkins University on "Pathological Anatomy and Its Relation to the Development of Medicine." Preceding the meeting, the midwinter dinner for all members of the Club will be held at the Harvard Club at 7 p.m.

MASSACHUSETTS COLLEGE OF PHARMACY.—It is announced that the anonymous gift of \$250,000 to the Massachusetts College of Pharmacy, recently reported, is from Mr. George Robert White of Boston. Work on the new building of the College, at the corner of Longwood Avenue and Worthington Street, will now be immediately begun, and it is expected that the structure will be complete and ready for occupation by December 1, 1917.

"The building will cover an area of 75,000 square feet.

"The exterior will be renaissance in character, with an imposing central Ionic portico of six columns of limestone, each 28 feet high, approached by a monumental flight of granite steps. The lowest story will be constructed entirely of heavy rusticated limestone, and will carry two stories of red brick laid in broad

joints with cornices, window frames, etc., of limestone. The front wall will be set back 80 feet from the line of Longwood Avenue, giving an opportunity for an approach by an esplanade paved with large slabs of stone.

"The ground floor is devoted mainly to two laboratories, the pharmacy laboratory 65 x 62 feet, and the chemistry laboratory, 62 x 58 feet, each 15 feet in height and having accommodations for about 400 students. In connection with these are the balance room, stock rooms, offices for the professors, and a general room for men students.

"The main floor contains two lecture rooms, for pharmacy and chemistry, respectively, each with accommodations for 300 students at a sitting, with adjacent offices for the instructing staff, and in addition, a monumental main rotunda, vestibule and staircase with floor of honed limestone and walls of Roman travertine, in which are placed tablets of purple Lepanto marble for inscriptions.

"From this corridor are the general offices, with the dean's office adjoining, the library, a homelike room suited for comfortable study and free from any institutional appearance, the trustees' room, panelled to the ceiling in quartered oak with architraves and chimney piece of verde antique marble, and large and pleasant quarters for the young women students. Check rooms, store rooms, public telephone booths and all other accessories are to be on this floor.

"The main staircase leads to the George Robert White hall, a beautiful assembly room with a seating capacity for 500, finished and panelled in chestnut with a stucco ceiling and a great stone chimney piece. At the head of the stairs will be a capacious foyer for the convenience of the audience during intermissions. In connection with George Robert White hall there are provided a buffet, a room for storing seats, ante rooms, facilities for illustration by films, etc. The top floor also contains the materia medica and biological laboratories, an alumni room, three classrooms and ample storage facilities.

"Coconcrete exit stairways in towers run from top to bottom of the building. The entire construction is to be fireproof with steel window sashes and terra cotta and steel floor construction. The equipment, including an air washer, a fan ventilating system with thermostatic control, complete telephone system, indirect lighting and site, will represent an outlay of over \$500,000."

HARVARD INFANTILE PARALYSIS CLINICS.—In previous recent issues of the JOURNAL we have noted the establishment by the Harvard Infantile Paralysis Commission of a Boston Clinic for the after-treatment of convalescent cases of poliomyelitis. A second clinic for this purpose has now been established at the Anna Jacques Hospital, Newburyport, which will hereafter be

a center for this work in northern Essex County.

"The commission is acting in full cooperation with the State Department of Health, and the work is unique in that it is the first instance in the country of a great university branching out in the work usually done by a state university. A clinic is in operation at the Children's Hospital under the direction of the commission, being open each week on Tuesday, Thursday and Saturday, while one at the Massachusetts General Hospital has already been established for children of the North, East and West Ends and Charlestown, and for adults from all over the State.

"The commission is composed of Dr. Robert W. Lovett, professor of orthopedic surgery at the Harvard Medical School, chairman; Dr. M. J. Rosenau, professor of preventive medicine and hygiene at Harvard; Dr. Francis W. Peabody, of the Peter Bent Brigham Hospital, and Mr. Roger Pierce. Arrangements are now being made whereby the Boston unit of the commission, composed of doctors and nurses who are experts in caring for paralysis cripples and prescribing corrective exercises and treatment, may go to various centres and return to Boston.

"The procedure of the commission is to communicate with private physicians, with paralysis patients, by means of workers, and tell them of the advantages the clinic offers with its experts, and that, with the consent of the physician, the child will be treated. If the doctor consents, notes are taken of the child's condition and given to him with suggestions.

"At the clinics, the patients are examined carefully, in order to discover what muscles are affected. If the attending physician is present, advice is given him immediately; if not, the information is mailed to him. In every case, nothing is done without the consent of the attending physician, and he is at perfect liberty to disregard any or all advice given him. The work is entirely one of coöperation between the University and the State for the alleviation of suffering, as far as possible.

"The State Department, through Dr. Allan J. McLaughlin, commissioner of health, gives all of its numerous facilities to the commission, while the latter gives its expert knowledge to the State. Clinical work of this sort has been given in Vermont, and is now being given in New York State, but Massachusetts has the distinction of being the first state to show such a great university coöperating with it.

"Nurses from any part of the country wishing instruction in diagnosis and care of paralysis patients, may attend clinics, and many are doing so. The commission has also been active in research work and in care of cases in their acute stages."

MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE.—At the recent annual meeting of the

Massachusetts Society for Mental Hygiene, the following were elected directors for the ensuing year: Chief Justice Arthur P. Rugg, Miss Alice P. Tapley of Boston, President Herman C. Bumpus of Tufts College, Dr. Austen Fox Riggs of Stockbridge, Frank C. Richardson of Boston, Miss Ada M. Fitts of Boston, Dr. F. W. Anthony of Haverhill, State Health Commissioner Allan J. McLaughlin, Dr. Milton J. Rosenau of the Harvard Medical School, Dr. Walter E. Fernald of the Massachusetts School for the Feeble-minded, Dr. George M. Kline of Boston, and Judge William T. Forbes of Worcester.

SMALLPOX IN WATERBURY.—Report from Hartford, Conn., on December 19, states that smallpox was, on that date, mildly epidemic in Waterbury, where 107 cases had been reported.

BOSTON HEALTH UNITS.—About a year ago the first Boston Health Unit was established on Blossom Street in the west end of this city. The experiment has been so successful that it has been recommended to the Boston Health Department to establish another similar unit on Meridian Street, East Boston.

DISTRIBUTION OF BOSTON CASES OF POLIOMYELITIS.—"The Boston Health Department has reported that sanitary conditions and density of population do not seem to be factors in the incidence of infantile paralysis. In the North End, with a population of 36,000, or 122 persons to the acre, only 17 cases were reported during the recent epidemic, whereas in the West End, old Ward 8, population about 33,000, or 189 persons to the acre, 46 cases were reported. Brighton, with a population of about 27,000, or nine persons to the acre, had only nine cases. East Boston, Ward 1, population about 24,000, had 25 cases, while Ward 2, in the same district, population 42,000, had 56 cases. Ward 23, population about 22,000, had nine cases, while in the Hyde Park district, Ward 24 adjoining, population about 23,000, 41 cases were reported.

"Although this outbreak was fought along the lines of a distinct communicable disease like diphtheria, scarlet fever and typhoid fever, it is a question if the hospitalization of cases helped to diminish the incidence of the disease. Of the total number of cases reported, 642, as many as 420 were removed to the hospitals. The theory, generally accepted by health officers, that the disease is spread by human carriers, needs further proof before it can be accepted."

ACIDOSIS IN WATERTOWN.—It will be remembered that almost exactly a year ago, there was a brief epidemic of acidosis in and about Boston, causing the death of a number of children. On December 20 a death from this cause was reported at Watertown, Mass., where the first similar case occurred last year.

Obituary.

FRANCIS J. KEANY, M.D.

1866-1916.

THE death of Dr. Francis J. Keany has created a void in the medical and lay community, that will be difficult to fill. The Boston City Hospital has sustained a serious loss, while his friends have been bereaved of a staunch comrade.

Dr. Keany was characterized by a broad catholicity of taste and a fine discrimination. His personality combined a charming, modest address, with gracious manners, and a sensitive disposition, perhaps too sensitive for his own contentment.

His companionability was enhanced by an irresistible gift of Celtic humor that was ever ready and subtle. This, together with a remarkable memory, gave his conversation a commanding, interesting and refreshing effect, enlivened his lectures, and made him quick in a thrust or parry.

In methods of thought he belonged to an earlier generation than that of today. In his professional ethics he was punctilious to an extreme. He governed his behavior in accordance with the older code, rather than with the present adaptation or interpretation of it. He conducted similarly his extensive practice in an old-fashioned manner, much to his pecuniary disadvantage. His charity was what would be expected from his general fulness of heart. Many a little patient on leaving his clinic was gladdened by the touch of a coin or bill slipped into his hand.

A passing note should be made of his acquaintanceship, because of its size and universality. There was hardly a class in which he did not exercise influence. He once remarked that he found his large circle of acquaintances an embarrassment, and never could decide whether it was an asset or a liability.

Dr. Keany's understanding of diseases of the skin and his training and experience in them was unusual. He was unsurpassed as a clinician. Clever and accurate in diagnosis, his demonstration of a case would often sparkle with a masterful display of knowledge.

In consultation he inspired confidence in both patient and physician. He usually expressed a definite opinion, not merely an elaborate differential diagnosis of questionable comfort. His faith in his own judgment was great, and yet there was no semblance of egotism.

As a student he was fortunate in falling early under the influence of Kaposi, Hebra and Lassar. In the clinics of these teachers he spent three years, coming in contact with them socially as well as professionally. Previous to beginning his special studies in Austria and Germany, he served for about a year in the Rotunda Hospital, in Dublin.

Dr. Keany was essentially a practising phy-

sician with a large clientèle. He did not write for publication, as he had little time and no inclination for it. For nearly nineteen years he devoted much of his energy towards developing the great municipal hospital, of which he was a trustee. No institution ever had a more loyal and resourceful servant.

His death was not unexpected; but it came sooner than was anticipated to lay claim to a gentle, genial and generous man.

At the time of his decease he was a Physician to Diseases of the Skin at the Boston City Hospital, and the Carney Hospital, Professor of Dermatology in Tufts Medical School, Lecturer in Dermatology in the Harvard Graduate School of Medicine and Councillor of the New England Society of Dermatology and Syphilis.

Formerly he was consulting dermatologist to the St. Elizabeth's Hospital and St. Mary's Infant Asylum. He was also at one time dermatologist to the Boston Board of Health.

TOWNSEND W. THORNDIKE, M.D.

Miscellany.

BOSTON CITY HOSPITAL.

MEMORIAL RESOLUTIONS FOR DR. KEANY.

The death of Dr. Francis J. Keany, one of our Trustees, occurred on November 23, 1916, and it was voted that upon this sad bereavement, the following be spread upon the Trustees' records:—

Francis J. Keany, M.D., Harvard, was for nineteen years a Trustee of the Boston City Hospital, having been appointed in July, 1897, and was for ten years a member of the Staff in the Dermatological Department. He continued, in the son, the public spirit and indefatigable industry of his father, in devoting these many years to the alleviation of the sufferings of the unfortunate sick of the City, to the upbuilding of the Hospital, and to the maintenance of the best work and traditions of the medical profession. In him, his fellow Trustees lose a pleasant and valued co-worker, companion and friend of many years, and sorrowfully appreciate the great loss which has come by his decease, to themselves as well as to the Hospital and its work of charity.

The Trustees express their individual, personal grief at the sad death of their fellow Trustee, and extend to his widow and children their heartfelt sympathy and condolence in their affliction and sorrow.

Voted, that the Secretary convey to the late Dr. Keany's family their appreciations of condolence as recorded herein, forwarding to them a copy of these resolutions.

A. SHUMAN, *President*.
JOSEPH P. MANNING, *Secretary*.
CONRAD J. RUETER,
THOMAS A. FORSYTH.

Correspondence.

AMMONIUM SALICYLATE IN POLIOMYELITIS.

A correspondent, Dr. Beverley Robinson of New York, has recently called attention to the following letter published in the *New York Medical Journal* of December 16, 1916. This letter, with Dr. Robinson's note of comment, is appended.—EDITOR.

"INFLUENZAL" POLIOMYELITIS.

CARMEL, NEW YORK, December 4, 1916.

To the Editors:

The interesting article on epidemic gastroenteritis, etc., by Dr. Bernard Frankel, in this week's issue of the *New York Medical Journal*, goes far to corroborate my contention that infantile paralysis is a development of influenza. As he states, "...infantile paralysis, has no clinical or etiological entity." This, I believe, should receive the endorsement of the entire medical profession. If such is the case, then it must be connected with some other disease.

The doctor states that "...it is a 'complication' of an infectious disease, that may or may not follow it." Why "complication"? I beg to respectfully take exception to this use of the word "complication" and desire to substitute instead the word "extension," or "development," and to attribute to influenza, the prevailing epidemic disease, the parentage of this interesting offspring. It is decidedly erroneous to regard it as a complication of any disease, just as it would be erroneous to consider, e. g., tuberculous meningitis as a complication of tuberculosis, or syphilitic osteomyelitis as a complication of syphilis. Just as these two phases of disease cited are extensions of tuberculosis and syphilis, respectively, so is poliomyelitis an extension of influenza.

It is an "extension" to the spinal cord and its membranes of the very same influenzal process that gives us "influenzal coryza," "influenzal bronchitis," "influenzal laryngitis," "influenzal gastritis," etc. It is but a very short step from any one of these to "influenzal poliomyelitis," and this is the correct term to use in identifying or placing the so-called mysterious disease.

To the amazing lack of appreciation by the medical profession of the true nature of influenza as a constitutional disease, and its right to rank side by side with such constitutional diseases as syphilis and tuberculosis, having, like them, similar ramifications and extensions throughout the body, is due the fact that many of its peculiar forms and developments are mistaken for distinct, separate diseases, whereas, in reality, they are part and parcel of the basic influenzal process, as I have repeatedly pointed out.

What has been said above regarding poliomyelitis holds good also for the epidemic gastroenteritis to which Dr. Frankel calls attention. The correct term to use in referring to it is "influenzal gastroenteritis."

JOSEPH D. HARRIGAN, M.D.

42 WEST 37TH STREET, NEW YORK,
Dec. 22, 1916.

Mr. Editor:

Dr. J. D. Harrigan's letter, in my judgment, is important and true. Why, then, ignore the only remedy of any value in the beginning of infantile paralysis, *i. e.*, salicylate of ammonium, as proven by Drs. D. M. Lewis and H. M. Shethfield?

Sincerely,
BEVERLEY ROBINSON, M.D.

A RULING OF THE STATE BOARD OF REGISTRATION.

December 24, 1916.

Mr. Editor:—

I beg to submit to the medical profession a ruling of the State Board of Registration in Medicine in the case which I reported in the *JOURNAL* on Nov. 23d, also a subsequent finding of the Industrial Accident Board on the same case.

The State Board of Registration found in the case "possible technical violation of the law," but found the person and corporation "well-intentioned" and the State Board has done nothing. No change whatever has been made and the person in charge continues to do more surgical work, than all the physicians in the district combined.

I will quote the finding of the Industrial Accident Board in its entirety.

"That at the time of this employee's injury there were posted in the plant of the insured, in several conspicuous places, notices to the employees of the physicians selected by the insurer to give necessary medical treatment in case of accident. The Board, however, find that these notices were inoperative by reason of the practice prevailing at the plant, which practice we find was acquiesced in by the insurer. It is reasonable to infer from all the evidence that instead of being posted in compliance with a statutory duty, these notices were intended for use only in the event of proceedings against the insurer to recover compensation for medical treatment obtained elsewhere than at the plant or by the physicians named in the notice.

"That the insurer did not furnish reasonable medical services in this case. It cannot be contended that the act contemplated that employees should submit themselves to treatment at the hands of a young man who is not only not a physician, but is not even a registered nurse, nor that such a person should judge of the seriousness of their injury. This is only one of a number of similar cases from this plant which have been brought to the attention of the Board. If employers are to receive a concession in their premium rate by maintaining medical departments, these departments should be in charge of properly qualified practitioners. This department at the Sturtevant Company is not a first-aid room; it is a continuous treatment room, dependent upon the judgment of the person in charge. It appears to us to be a clear violation of S. S. C. 76, R. L. The danger to the employee from such a practice is plain without further comment from us."

Physicians can draw their own conclusions from a study of the two reports.

Yours very truly,

CHARLES MALONE, M.D.

5 Glen Road, Jamaica Plain, Mass.

AN UNUSUAL CASE.

ATHOL, MASS., Dec. 30, 1916.

Mr. Editor:

Mr. A. J. F. of Athol, Mass., painter by trade, was taken ill on December 21, 1916, with complete obstruction of the bowels and suppression of urine, which continued until toward the middle of the day, December 28, 1916. The patient now seems to be making a good recovery. If, in your judgment, this record is sufficiently unique to warrant making a record of it in your *JOURNAL*, you are at liberty to do so.

Respectfully yours,

A. V. BOWKER, M.D.

INDUSTRIAL ACCIDENT BOARD RULING.

Boston, Jan. 2, 1917.

Mr. Editor:

The following is a copy of a ruling issued by the Industrial Accident Board as the result of a conference upon the petition of certain members of the medical profession in regard to the matter of furnishing hospital treatment to injured employees under the Workmen's Compensation Act:

The Industrial Accident Board is in receipt of the following "protest" from various members of the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, to the number of several hundred:

"The undersigned medical men wish to protest against the practice of a certain few insurance companies of referring their cases to open hospitals and clinics. If the patients go there themselves well and good, but to 'furnish' medical care by referring the patient to a charity is virtually telling him to go take care of himself; it gives him no care or privilege whatsoever, which is not the intent of the Act, as we understand it.

"We refer this question to your honorable body with the request for a ruling as to whether such reference can be considered adequate care within the meaning of the Act."

After hearing representatives of the physicians and the insurers, the Industrial Accident Board states its position on the matter to be as follows:

The Board does not approve of the practice, if it exists, of insurance companies in referring cases to open hospitals and clinics, unless insurers have previously made arrangements with such hospitals and clinics for the furnishing of treatment to injured employees.

To "furnish" treatment within the meaning of the Act imports, in the opinion of the Board, something more than a mere direction to an employee to go to an open hospital or clinic. It requires that the insurer shall make adequate arrangements for the care of those to whom the duty is owed in the event of injury. Such an arrangement between the insurer and the hospital would imply that the hospital is prepared to give the injured employee reasonable services; and in any case where the adequacy of such service, arranged for between insurer and the hospital, is questioned, it will be considered by the Board on its merits.

FRANK J. DONAHUE, *Chairman.*

NOTICE.

HARVEY SOCIETY.—The fifth of the current series of lectures before the Harvey Society will be delivered at the New York Academy of Medicine on Saturday evening, January 13, by Professor E. V. McCollom, on The Supplementary Dietary Relationships among our Natural Foodstuffs.

RESIGNATIONS AND APPOINTMENTS.

It is announced that Dr. FRANKWOOD E. WILLIAMS, chairman of the Massachusetts Advisory Prison Board and Executive Secretary of the Massachusetts Society for Mental Hygiene, has resigned both these positions to accept an appointment as Associate Medical Director of the National Committee for Mental Hygiene.

It is announced that Mayor Curley has appointed Dr. HENRY S. ROWEN of Brighton, Mass., to succeed the late Dr. Francis J. Kenny as trustee of the Boston City Hospital.

It is announced that PROFESSOR W. KOLLE, chief of the institute for bacteriology and hygiene of the University of Berne, has been appointed to succeed Pro-

fessor Ehrlich in the Institute for Experimental Therapy at Frankfurt. PROFESSOR HANS SACHS, formerly assistant to Professor Ehrlich at Frankfurt, has been appointed director of the Institute, under Professor Kolle.

It is announced that Dr. WILLIAM J. BRICKLEY has resigned as resident surgeon of the Haymarket Square Relief Station, and that Dr. JOHN G. BRESLIN, formerly chief of the East Boston Relief Station, has been appointed to succeed him on January 1, 1917. Dr. BERNARD F. DEVINE, present chief of the East Boston Relief Station, has been appointed to assist Dr. Breslin at the Haymarket Square Station.

RECENT DEATHS.

Dr. EDWARD MARSHALL BUCKINGHAM, treasurer of the Massachusetts Medical Society since May 22, 1896, died suddenly following an attack of angina pectoris, at his home in Boston, December 23, 1916, aged 68 years.

He received the degree of M.D. from the Harvard Medical School in 1874, and had practised his profession in Boston since that time. A full obituary notice of Dr. Buckingham will appear in a later issue of the JOURNAL.

Dr. EDMUND DOE SPEAR, otologist and writer, died at his home in Jamaica Plain, December 25, 1916, at the age of 65. He was born in Boston, October 17, 1851, and was educated in the public schools and at the Harvard Medical School, where he received his degree in 1874. He was on the staff of the Massachusetts Charitable Eye and Ear Infirmary and was aural surgeon to the Boston City Hospital and a frequent contributor to medical journals. He was a member of the American Otological Society and the Massachusetts Medical Society. He leaves his widow and two daughters.

WILLIAM J. COATES, M.D.V., who died at New York City on December 19, was born there in 1857. After graduating from the American Veterinary College in 1877, he studied medicine at New York University. Later, when the American Veterinary College became a part of the University, Dr. Coates became dean of the former institution.

EDWIN H. SIMMONS, D.M.D., who died at Worcester, Mass., on December 24, was born in 1848. He had practised dentistry in that city for many years. He is survived by his widow and three sons.

Dr. C. S. HÄGLER, who died recently of carcinoma at Basel, Switzerland, was born in 1862. He was a noted surgeon and bacteriologist and was connected with the University of Basel.

Dr. K. B. PONTOPIDAN, who died recently at Copenhagen, was born in 1853. He was professor of nervous and mental diseases and of forensic medicine at the University of Copenhagen, and since 1898 had been chief of the Aarhus Insane Asylum.

Dr. ABNER LITTLE MERRILL, of Exeter, N. H., who died on December 20, in Boston, was born at Exeter on January 23, 1826. After graduation from the Phillips Exeter Academy, he entered Harvard, from which he received the degree of A.B. in 1846, and that of M.D. in 1849. With the exception of Dr. Nicholas E. Soule, he was the oldest living alumnus of the College and the Medical School. After practising his profession for a time, Dr. Merrill retired from medicine and went into business at Newburyport, Mass., where he continued until 1890. In 1895 he married Miss Harriet M. Robinson, who died in February, 1894. Dr. Merrill was the last surviving member of the Harvard class of 1846.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

January 18, 1917

ADDRESS		BOOK REVIEWS	
THE DUTY OF THE HEALTH DEPARTMENT IN THE ALCOHOL QUESTION. <i>By Haven Emerson, M.D., New York.</i>	77	Diseases of Children. <i>By Edwin E. Graham, A.B., M.D.</i>	102
ORIGINAL ARTICLES		Diseases of the Eye. <i>By George E. Deschamps, M.D.</i>	102
X-RAY FOLLOW-UP REPORT OF SEVENTEEN CASES OF PYLORECTOMY FOR ULCER. <i>By John H. Lindsey, M.D., Fall River, Mass.</i>	80	The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago	102
OBSTETRIC ADVANCES, INCLUDING ANESTHESIA, THE USE AND ABUSE OF PITUITRIN, EXTRA-PERITONEAL CAESAREAN SECTION, PUBOTOMY AND THE SIGNIFICANCE OF FUNNEL PELVIS. <i>By John Osborn Polak, M.D., Brookline, N. Y.</i>	85	EDITORIALS	
THE COEFFICIENT OF SAFETY IN SURGICAL OPERATIONS. <i>By Herbert L. Smith, M.D., Nashua, N. H.</i>	88	CHARLES FRANCIS WITHINGTON	193
SOME LIMITATIONS IN RONTGEN-RAY EVIDENCE OF GASTRO-INTESTINAL LESIONS. <i>By Franklin W. White, M.D., Boston.</i>	92	THE TREATMENT OF SYPHILIS	103
THOROT-AB-CHES: (WITH MENTION OF TWO NEW SIZES OF THIS CONDITION). <i>By Frank H. Lahey, M.D., Boston.</i>	94	ORTHODONTIA IN MEDICINE	104
AN ANATOMICAL FACTOR AS A CAUSE OF PYORRHEA. <i>By Carolus M. Cobb, M.D., Lynn, Mass.</i>	95	MEDICAL NOTES	105
A FURTHER WORD ON THE STERILIZATION TREATMENT OF FURUNCULOSIS. <i>By John T. Bower, M.D., Boston.</i>	96	OBITUARY	
CLINICAL DEPARTMENT		WALTER JAMES DODD, M.D.	106
TREATMENT OF PERFORATED ULCER OF THE STOMACH WITH THE DUODENAL FEEDING TUBE. <i>By Lester C. Miller, M.D., Worcester, Mass.</i>	97	WALTER (WALTER J. DODD, M.D.)	107
		CHARLES HENRY RICE, M.D.	108
		MASSACHUSETTS MEDICAL SOCIETY	
		INDUSTRIAL HEALTH INSURANCE	108
		CORRESPONDENCE	
		FAILURE TO REPORT OPHTHALMIA NEONATORUM. <i>Walter P. Bowers, M.D.</i>	109
		MISCELLANY	
		CHANGES IN THE MEDICAL CORPS, U. S. NAVY	109
		NOTICES, RESIGNATIONS AND APPOINTMENTS, RECENT DEATHS, ETC.	110

Address.

THE DUTY OF THE HEALTH DEPARTMENTS IN THE ALCOHOL QUESTION.

By HAVEN EMERSON, M.D., NEW YORK,

Health Commissioner of New York City.

The state laws under which health boards or departments of health operate in most cases allow very general powers and broad jurisdiction over all matters affecting the health of the community. Any such delegation of authority to a small body of experts for the protection of all the people imposes by the same act proportionate responsibilities.

The community looks to its elected and appointed, salaried servants to protect the whole against the results of thoughtlessness, ignorance or malice of any individuals or groups, even at the cost of restraining personal liberty or appropriation of property. Not only is a high death rate quite properly a reflection upon the administration of local government and a gauge of the intelligence and social standards of a city or state, but it brings with it certain, though not generally observed, commercial disadvantages and burdens expressed in an increasing tax rate.

Similarly, certain types of disease are accepted as indices of a community's success in obtaining social justice and the advantages of a gregarious manner of life. The incidence of typhoid fever, the presence of rabies or smallpox, the tuberculosis sick rate and death rate,

the infant mortality rate, are looked upon as truer measures of civilization than the number of churches, banks or libraries in a town. The economies of civil government require the saving of lives and the prevention of sickness to be accomplished at the minimum of expense.

The bookkeeping of public health administration demands two kinds of balance sheets, one kept by the statistician, the registrar of morbidity and mortality, the running account with sickness and death, the other the financial statement to the taxpayers, expressing in analytical form the end product of per capita cost stated in terms of community health. To do this honestly, the health officer must point out to the taxpayer what kinds of disease can be controlled by exercise of the police power of the State, and what disorders and disabilities and deaths can be diminished only by the voluntary acts or agreements of the individuals concerned. We have a fairly logical division of diseases into three classes from the sanitarian's point of view.

First in importance, up to the present time, have been the communicable diseases. The elimination of these has been the object of health officers throughout the world, and a cursory glance at the results will show that the disappearance of many and the great reduction of all has followed the discovery of the specific cause of the disease in a few instances, the method of transmission in many, and in several instances of a specific preventive or curative therapy. The technic of control of this class of diseases amounts almost to an exact science.

The second group are the diseases of occu-

pation,—the poisonings, the effects of dusts, the disturbances of health due to unsanitary environment of working places. Poisoning by phosphorus, lead, acids, the dusts of animal and vegetable products, are well recognized, and admirable results have followed intelligent application of suitable preventive measures. Education and tactful enforcement must combine to accomplish results.

The third group includes the disorders of development and function resulting from people's habits in their home or personal life, their habits of housing, eating, clothing, exercise, recreation. As can be readily seen, this last group is hardly amenable to other than educational treatment, for however exacting the building and labor laws, an uninstructed populace can bring about unsanitary and unhygienic conditions in excellent buildings and under generous conditions of employment.

Among the habits which bring individuals and communities to harm is the habitual use and abuse of alcohol. Its use is almost always a habit, and a harmful one, and its abuse invariably leads to rapid mental and physical degeneration. Section 1169 of the Charter of the City of New York specifies among the other duties of the Board of Health the following:

"The Board of Health shall use all reasonable means for ascertaining the existence and cause of disease as peril to life or health and for averting the same throughout the city, and shall promptly cause all proper information in possession of said board to be sent to the local health authorities of any city, village or town in this State which may request the same, and shall add these to such useful suggestions as the experience of said board may supply."

Section 181 of the Sanitary Code states that:

"No person shall knowingly or carelessly or negligently do or contribute to the doing of any act dangerous to the life or detrimental to the health of any human being, nor shall any person omit to do any reasonable and proper act or take any reasonable or proper precaution to protect human life and health."

What more authority or direction is required to oblige the Department of Health of New York City to collect facts as to the cause of any disease, to state the results publicly, and use all means to warn and protect the people against their danger?

What are the facts? The deaths from the epidemic of infectious colds, improperly called an epidemic of grippé, during the winter of 1916, resulted in 2000 deaths and probably was responsible for ten times as many serious cases of sickness. This epidemic aroused widespread interest, and was the subject of much discussion and attempts at education of the public by

the Health Department of New York and other cities.

From the records of the Department of Health of the City of New York it appears that there are annually at least two thousand deaths admittedly due to the excessive use of alcohol. It is a matter of record that eight thousand cases of acute alcoholism are treated annually at Bellevue Hospital, New York. Anybody familiar with general medical practice or the service in the general medical wards in any hospital in the large cities of this country, where the use of alcohol is common in our large cities, will be willing to testify to the very considerable, if not determining rôle that alcoholic habit plays in the course and termination of a large proportion of the diseases which come under observation.

Is this not sufficient to justify the use of such powers as the Board of Health has to prevent the use of alcohol in the community?

Alcohol, a consistently depressing, habit-forming drug, causes characteristic easily recognized diseases of the brain, nerves and special senses. Alcohol causes definite damage to the heart, kidneys, blood vessels and organs of digestion, especially the stomach and liver. When alcohol is used so moderately as to cause none of the special diseases due solely to its effects, it is known to damage the unborn babe, the nursing child and the grown man and woman in such ways as to render them peculiarly susceptible to the infectious and communicable diseases to which all people are exposed.

Certain types of permanent damage to mentality, and various psychical disorders in children, are accepted results of the use of alcohol in parents.

Alcohol can be used as a food, but at a cost both economical and physiological, which causes bankruptcy of pocket and health. In a few diseased conditions it has been found useful, but not indispensable.

Alcohol is a protoplasmic poison, like ether and chloroform, with slower but more enduring effect.

Alcohol has the physiological effect of gradual anesthesia acting upon the powers of perception, judgment, self-control, reasoning and intelligence until the human being is gradually stripped of all capacity for conscious direction, and becomes a reflex animal responding automatically and without choice to gross external physical stimuli.

The weary human, suffering from the misfortunes of his own creation or harrassed by the injustices of an artificial social order, turns for separation from his environment to the dullness and unrestraint which alcohol brings. Then is he not only unprepared for effective effort, competition or responsibility, but he is exposed particularly to the ever-ready infection, of which acute pneumonia is the most striking example.

These statements are not personal opinions. The world admits them and then says: "What then! Shall we give up this happy thoughtlessness for the chance at a bit longer and bit healthier life?" And up to the present time the answer has been all but unanimously "No."

It is as I conceive it the duty of health departments to change the answer. How? By the use of the police power of the State, that broad and powerful arm of law under which so much of the authority of Boards of Health has been exhibited? By legislation, that hope of democracy, the mythical voice of the people acting through their elected representatives? Or by education and example, the weapon of the teacher, the physician, the friend?

What the church has failed to do, the factory and the shop have undertaken. What laws and police repression have failed to effect, the spoken and written word can accomplish.

If a flagon of alcohol were offered to a student of pharmacology to test as a curiosity, and he applied the standard methods of physiological experiment to it, he could but come to the conclusion that he was dealing with a more dangerous chemical than any now available in the whole range of *materia medica*, not second to opium or its derivatives as a destroyer of character, a disturber of function and a degenerator of tissue, and he would be quite justified in advising the prohibition of its manufacture and use as a beverage.

Social custom and national habit have so sanctioned the use of this particularly anti-social drug that study, judgment and education have to win their case against a vast inertia.

Is the task harder than teaching the world that it may conquer tuberculosis, or the nations that they cannot live if they waste their baby life?

Is not the goal as splendid and shall our hopes be less than those of the crusaders against tuberculosis and the waste of child life, who have saved more lives annually than the armies are costing this very year in Europe?

It is, as I conceive it, the duty of health departments to teach, teach, teach, persuade, demonstrate, exhibit, exhort, prove that alcohol as a beverage, or in patent medicines is a menace to personal and community health, is a common source of sickness and death, is blocking the path of preventive medicine and is a danger to the physical and social development of the nation.

The Mayor of the City of New York has indicated his approval of the methods of the Department which have been used in combating insanitary conditions or harmful practices in the City of New York, and his annual address on May 2nd he spoke as follows:

"The basis of efficient public health work is public health education. As you are aware, the Department of Health is now, not only

through the public press and special bulletins but with cooperation of churches, local civic and other community organizations, carrying on day by day helpful educational work in public and personal hygiene. In this work the Department is not undertaking a crusade against the personal habits of the people of the City, but is calling attention in popular form to scientifically established facts which affect community health and personal efficiency."

Dr. Abbott of Waverley, Massachusetts, a recognized authority in insanity, has recently stated in the *BOSTON MEDICAL AND SURGICAL JOURNAL* in an article on "Preventable Forms of Mental Diseases," that the most important of the toxic psychoses and brain diseases are the alcoholic.

"Alcohol insanity is a wholly preventable psychosis. One eighth of all admissions to hospitals for insane are due directly to this cause, and an indefinite number of other psychoses, of which alcohol is an important contributing factor." "Movements which seek to educate the public as to exact facts, without prejudice, exaggeration, or sentiment, are the best." "An intelligent and educated public sentiment will support restrictive measures aimed at wholesale protection against evils of alcohol, by rigidly restricting the sale of that which causes them." "If everyone knew what the effects of alcohol really are, its internal use would almost be limited to the prescriptions of physicians."

Within the limits of this brief presentation it is impossible to avail myself of the mass of reliable and important contributions to the social and medical aspects of the use of alcohol. The employers of labor, the teachers of industrial efficiency, the workers among the poor, the physicians in Health Departments and in private practice very generally agree that alcohol causes a large amount of preventable disease, accident and disability, and that its use should be discontinued.

In closing I can but repeat my conviction that it is the duty of Health Departments to inaugurate and carry on by all available means, persistent campaigns of education, to the end that the community, which it is called upon to protect, may be in a position to judge for itself as an organized social group and as independent members, whether they are willing to ignore their own interest, their safety and their health by permitting the continued unlimited manufacture and sale of alcohol.

I venture to predict that no advance in the control of preventable disease of bacterial or infectious origin in the future, could accomplish such reduction of the morbidity and mortality of the community, as would undoubtedly follow the elimination of alcohol as a beverage.

Original Articles.

X-RAY FOLLOW-UP REPORT OF SEVENTEEN CASES OF PYLORECTOMY FOR ULCER.

BY JOHN H. LINDSEY, M.D., FALL RIVER, MASS.,

Röntgenologist, The Truesdale Clinic.

INFERENCES often are inconclusive when drawn from the condition of patients at the time of an early post-operative discharge from the hospital. The importance is realized of observing patients for a long time after operation in order to determine the permanence of an improvement or apparent cure.

Reproductions are presented herewith of gastric roentgenograms made at varying periods after pylorotomy for ulcer. These plates are believed to have intrinsic interest and also to be of especial importance as representing an x-ray follow-up of patients for long periods after operation.

Nineteen cases are included in this report with roentgenographic study of seventeen. This series of operations of pylorotomy for ulcer is taken from the Truesdale Clinic. The first seven cases were reported two years ago by Dr. P. E. Truesdale (*BOSTON MEDICAL AND SURGICAL JOURNAL* Vol. clxxi, No. 4, pp. 151-156, July 23, 1914). The case listed here as A1 was also reported at that time as No. 8. Cases No. 8 and No. 11 of this series are not represented in this list of roentgenograms. Case No. 8, Mrs. M. C., was not found at her former residence and could not be traced. Case No. 11, Mr. J. M. B., lives in Ohio. He was forty years of age at the



CASE No. 1. Mr. J. S.

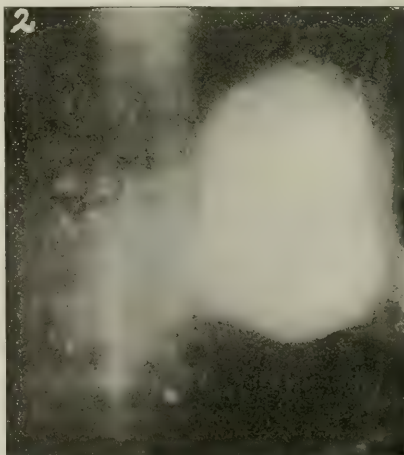
Referred by Dr. G. G. Parlow. Gastroenterostomy, Jan. 17, 1908; pylorotomy, Jan. 28, 1908; age at operation, 43; x-ray, Nov. 14, 1916; time since operation, 7 yr. 9 mo. 17 d.

time of his pylorotomy. He has an interesting surgical history. In 1907 an operation was performed at Columbus, Ohio, for an acute perforating ulcer of the duodenum. The perforation was sutured. Seven or eight months later a gastro-enterostomy was done. In 1910, he was operated upon for hernia in the scar. The appendix was removed at that time. Pylorotomy was done at the Truesdale Hospital on Feb. 20, 1915. The latest report from this patient stated him to be in good condition.



CASE No. A1. Mr. J. G. C.

Pylorotomy, Dec. 5, 1913; age at operation, 41; x-ray, Aug. 27, 1916; time since operation, 2 yr. 8 mo. 22 d.



CASE No. 2. Mr. G. C.

Referred by Dr. W. G. Turner. Pylorotomy, Sept. 23, 1910; age at operation, 57; x-ray, Aug. 11, 1916; time since operation, 5 yr. 10 mo. 19 d.



CASE No. 3. Mrs. C. E. T.

Referred by Dr. C. A. Briggs; pylorotomy, Nov. 22, 1911; age at operation, 65; x-ray, Aug. 4, 1916; time since operation, 4 yr. 8 mo. 13 d.

While it is difficult to standardize conditions at repeated gastric x-ray examinations, there is *prima facie* evidence in this series of plates that the stomach, after pylorotomy, tends to enlarge or dilate and thus compensates for the part removed at operation. In some cases, where a wide resection has been performed, the stomach does not seem to have much opportunity or occasion to dilate. In Case No. 13, Plate C, for example, a very rapid emptying of the stomach is shown. This plate was



CASE No. 5. Mr. H. D. Y.

Referred by Dr. G. G. Parlow; Pylorotomy, Sept. 3, 1913; age at operation, 30; x-ray, July 13, 1916; time since operation, 2 yr. 10 mo. 10 d.

taken soon after the administration of the barium-buttermilk. The stomach in this case acts very much like a funnel which merely directs the liquid meal into the intestine. The meal does not stay in the stomach long enough to produce a tension which would cause dilatation. The stomach in Case No. 15 also empties rapidly.

From the clinical information given the roentgenologist, all of these patients, with the ex-



CASE No. 4. Mrs. M. E. M.

Referred by Dr. G. H. Hicks; pylorotomy, May 4, 1912; age at operation, 60; x-ray, Aug. 15, 1916; time since operation, 4 yr. 2 mo. 11 d.



CASE No. 6. Mr. B. M.

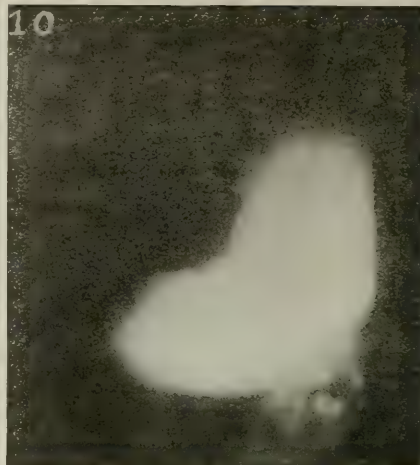
Pylorotomy, Sept. 8, 1913; age at operation, 43; x-ray, July 27, 1916; time since operation, 2 yr. 10 mo. 19 d.



CASE No. 7. MR. J. F. P.

Pylorectomy, Jan. 1, 1914; age at operation, 57; x-ray, Aug. 24, 1916; time since operation, 2 yr. 7 mo. 23 d.

ception of No. 2 and No. 10, seemed in good condition. No. 2 has returned recently, exhibiting an inoperable malignant growth of the omentum, with some involvement of the stomach. No gastric malignancy was observed in the antero-posterior plate taken in August for this series. A plate taken recently in an oblique position shows a small gastric defect. No. 10 reported improvement after the operation but



CASE No. 10. MR. C. E. H.

Referred by Dr. E. F. Curry. Pylorectomy, Jan. 25, 1915; age at operation, 36; x-ray, Aug. 17, 1916; time since operation 1 yr. 6 mo. 23 d.

that for some time he had been having considerable discomfort and had been losing weight.

Case No. 4 is of especial interest in view of her age and the fact that she is reported recently to have had a prolonged attack of pneumonia.

Case No. 5 entered the hospital for pyloric obstruction. While in the hospital, tubercle



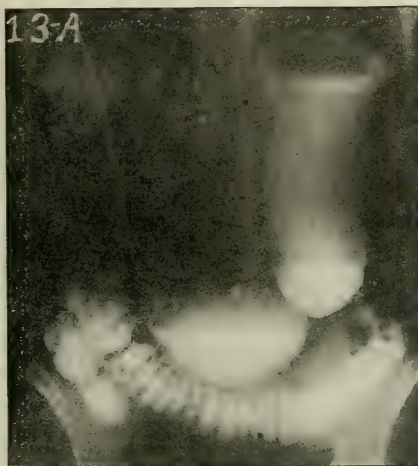
CASE No. 9. MRS. A. A.

Referred by Dr. J. H. Gifford; pylorectomy, Oct. 2, 1914; age at operation, 54; x-ray, April 5, 1916; time since operation, 1 yr. 6 mo. 3 d.



CASE No. 12. MR. H. B.

Gastroenterostomy, Nov. 13, 1911; pylorectomy, March 6, 1915; age at pylorectomy, 58; x-ray, Jan. 6, 1916; time since operation, 10 mo.



CASE No. 13, PLATE B. MRS. M. C. B.

X-ray Feb. 26, 1915. Plate taken before operation shows hour-glass stomach.

bacilli were found in the sputum. Later he had an acute exacerbation of his tuberculosis, and suffered from haemoptysis. His stomach however, has withstood the strain. The tuberculous process remains quiescent.

In general, the efficient manner in which these stomachs have performed their function, at such long periods after operation, testifies to the essential conservatism of an apparently radical operation.



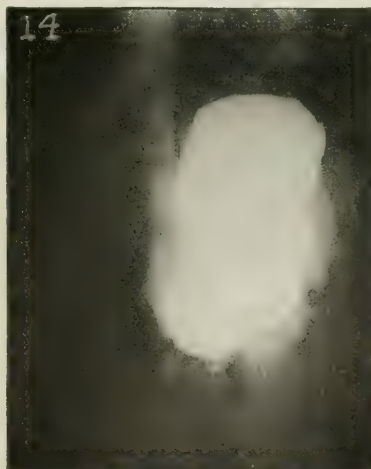
CASE No. 13, PLATE B. MRS. M. C. B.

Pylorotomy, April 21, 1915; age at operation, 53; x-ray, Oct. 21, 1915; time since operation, 6 mo.



CASE No. 13, PLATE C. MRS. M. C. B.

Pylorotomy, April 21, 1915; age at operation, 53; x-ray, Aug. 18, 1916, time since operation, 1 yr. 3 mo. 28 d.



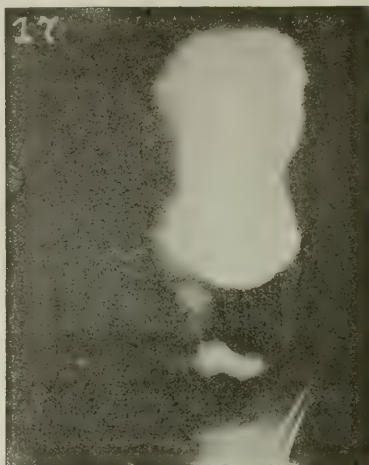
CASE No. 14, Miss K. C.

Pylorotomy, May 10, 1915; age at operation, 27; x-ray, Aug. 17, 1916; interval, 1 yr. 3 mo. 7 d.



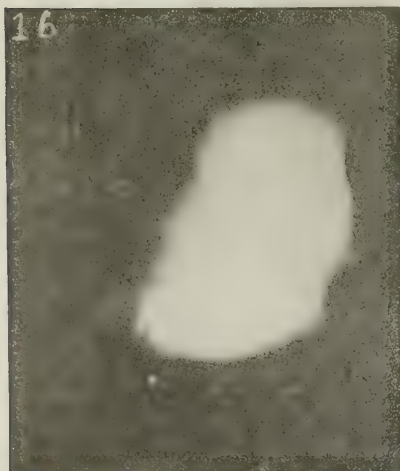
CASE No. 15. Miss R. B.

Referred by Dr. M. A. Cummings. Pylorotomy, July 12, 1915; age at operation, 39; x-ray, Aug. 21, 1916; interval, 1 yr. 1 mo. 9 d.



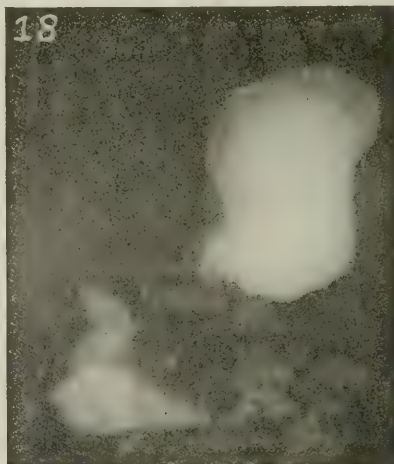
CASE No. 17. Mr. B. C.

Pylorotomy, Nov. 2, 1915; age at operation, 40; x-ray, Aug. 18, 1916; time since operation, 9 mo. 16 d.



CASE No. 16. Mr. J. C.

Referred by Dr. W. E. Turner. Pylorotomy, Aug. 2, 1915; age at operation, 52; x-ray, Aug. 17, 1916; interval, 1 yr. 15 d.



CASE No. 18. Mr. T. B.

Pylorotomy, Dec. 4, 1915; age at operation, 48; x-ray, June 10, 1916; time since operation, 6 mo. 6 d.

OBSTETRIC ADVANCES, INCLUDING ANESTHESIA, THE USE AND ABUSE OF PITUITRIN. EXTRA-PERITONEAL CAESAREAN SECTION. PUBIOTOMY, AND THE SIGNIFICANCE OF FUNNEL PELVIS.*

By JOHN OSBORN POLAK, M.Sc., M.D., F.A.C.S.,
BROOKLYN, N. Y.,

Professor of Obstetrics and Gynecology, Long Island College Hospital.

At the request of your secretary, I am going to call your attention to a few of the advances which have been made in the Obstetric Art. He has asked me to speak to you particularly on the subject of anesthesia in labor, and to touch on that part of the subject which has caused so much newspaper notoriety, known as "Twilight Sleep."

First of all, we must understand and admit that the influences of civilization have changed the muscular force or "horse-power" of many of our women—I think you will all admit this fact. Consequently, there has been a demand for the relief of pain in labor. Our friends in Boston have popularized the delivery by Caesarean and various other operative means, in the highly nervous and the physically unfit woman. There is in this class of women a definite shock attending labor—so severe in some, leaving them so prostrated, that you will find a large number of society women who are unwilling to undergo the strain of a subsequent labor. This shock is an absolute entity. Sometimes it is extremely profound, and after what Crile has taught us in his anoci-association, and Koenig and Gauss have brought out in their method of amnesia in labor (which is but an obstetric application along the lines which Crile has made so much of), just as he diminishes his shock by a pre-anesthetic dose of morphine, so may we reduce the shock in labor by relief of pain during the first and second stages.

Any one who has had much obstetric experience knows what happens immediately after delivery:—there is a sudden drop of the pulse-rate because of the lowered abdominal tension and the sudden dilation of the abdominal veins, the quality of the pulse and blood pressure is suddenly lowered, and we have a post-partum shock—the intensity of which depends upon the length of labor and the individual resistance. In our civilized women, who marry at a later age than their mothers and grandmothers, there is a rigidity of the cervix which tends to prevent the easy dilatation of the cervical ring or, at least, takes more time to accomplish it; and this means pain—and pain is work—and work exhausts. They are not good patients in standing pain; and we know that complete dilation of the cervix is absolutely necessary to permit

of the natural delivery of any child. It takes time and the natural factors—pains and a bag of waters—to dilate the cervix. There are a number of cervices which dilate to a certain point and quit—yet the labor pains go on; but the woman makes no advance because the pains are ineffectual, the muscle is tired, the pain has no "punch." If a single dose of morphine is given to this woman and she gets a few hours' rest, she starts in with renewed vigor, and the cervix is dilated rapidly.

These facts cannot be contradicted by anyone who has had any obstetric experience. Consequently, we have adopted and employed with considerable success morphine and scopolamin in labor. The present status of anesthesia is about this: During the first stage we have two drugs which definitely aid dilation, relieve muscular spasm and diminish the shock of the first stage of labor—these are morphine and chloral. We can give moderate doses of morphine, for its analgesic effect, during the first stage, and it has no influence whatsoever on the child. While morphine can be given hypodermically, chloral cannot, and is likely to be rejected by the stomach—hence, the more general employment of the former. Then came up the question of whether it was not an advantage to cut off the nerve trunks and prevent the brain cells from participation in the mental strain of labor. To accomplish this scopolamin was introduced, and loss of memory or amnesia obtained—the so-called "Twilight Sleep." With the proper administration of morphine and scopolamin we produce an amnesia or loss of memory to the occurrence of pain, without interference with the force of the involuntary muscular contractions of the uterus. We are able in this way to carry women for 10, 15 or 30 hours in the first stage of labor, and secure complete dilatation of cervix, without the woman having the strain or recollection of her suffering, and without hearing the constant request: "Doctor, you will have to do something for me—I can't stand it." This amnesia takes away the element of shock. It is safe in the first stage to relieve pain with morphine and scopolamin or chloral, when the uterine contractions are regular or excessive and the relations between head and pelvis are known.

In the second stage, morphine and scopolamin have a *definitely injurious effect*, as they prolong the second stage; and, by prolonging this stage, subject the child to a longer period of continued pounding and uterine compression, which interferes with the feto-placental circulation. As soon as the head passes through the cervix, if the membranes have been ruptured for any length of time, the uterine walls are more or less tightly moulded on the child, interfering more and more, as labor goes on, with the fetal-circulation. If you will take the trouble to listen to the fetal heart during a contraction of the uterus when the woman is in the

* Address on Obstetrics before the New Hampshire State Medical Society, March 16, 1916.

second stage, you will notice the extreme flights of the fetal pulse, even when the head is making rapid progress through the pelvis. Add to this the slow-moulding through a tight pelvis, and the toxic influences of the drugs, and such interference with the feto-placental circulation that we get oligopnoea and cyanosis in the child—which has been the criticism of the opponents of this method.

Our experience is based on 550 cases conducted by my associates and myself, and we have had four dead babies in the series of 550 selected cases. They were not consecutive cases, though I believe that it is a lower fetal mortality than you could get by any other method of conduct. The amnesia has been conducted by two men who are paid residents in the Department of Obstetrics and Gynecology, and not left to internes. These men have been with me two to four years, and are trained obstetricians. One baby died two days after birth. On autopsy we found hemorrhage into both supra-renals. This baby was oligopnoeic on delivery. Another case, which showed a diaphragmatic hernia with transposition of viscera, died at the end of four days. The third fatality occurred within an hour after the delivery. On autopsy we found atelectasis of both lungs. The fourth case was one of cord three times about the neck—which was born dead. These four cases, all of which were autopsied and all of which I believe died of causes independent of morphia, are the best evidence of what proper organization can do in obstetrics. We use morphine and scopolamin in our border-line contractions of the pelvis, in order that the woman may have complete dilatation of the cervix, so that she may be given her test labor after dilatation has been accomplished. Eighty per cent. of spontaneous deliveries in border-line pelvis is a record which should endorse analgesia in labor. In heart cases—and we have had nine in which decompensation occurred either immediately before labor or during the first stages—it has been wonderful to note the action of the heart under the influence of morphine and scopolamin, where apprehension forms such a great factor. Heart cases, as you know, do not bear physical pain or muscular strain without serious effects. By the relief of this apprehension and consciousness of pain, the involuntary muscles have been competent to obtain complete dilatation, when the physical exertion of the second stage was avoided by delivery with forceps without the use of further anesthetic. While it is our habit to have the baby's heart listened to and the rate recorded every fifteen minutes during the later stages of labor, it is not because of the effect of the drug, but simply that we have found that we can save more babies by noting the changes occurring in rate, rhythm and bruit of the fetal pulse. In Friburg they began the frequent auscultation because they were afraid of the drug. Then they found there was no effect

from the drug in the first stage—only in the second stage was there danger. They then found they were able to detect other things—as coils of cord about the neck, short cord, etc.—by recognizing the fetal souffle.

While my resident was spending the summer with Williams, in Baltimore, he was asked to conduct thirty cases for him. In twenty-two cases the baby cried spontaneously on birth. In eight cases, when he listened to the fetal heart, there was a definite *funic souffle*. Each one of these cases was mildly asphyxiated and had the cord one or more times about the neck—showing you that it was possible for him to make a diagnosis of the cord about the neck by the *souffle*, and the variations in the fetal pulse during the pain.

We still plug the ears with cotton—as we cannot keep a hospital as quiet as we can a private house—and we bandage the eyes. We then sit down alongside of the patient and talk to her, just as though we were going to administer an anesthetic, and give her the first dose of morphine and scopolamin, using 1-4 or 1-6 of a grain of morphine and 1-130 grain of scopolamin as the initial dose, giving it hypodermically; and we tell her she will have relief from pain very shortly—repeating this in a monotone. You all know the influence of the personal element in giving ether. At the end of an hour, she is given a second dose of scopolamin—1-130 of a grain. By that time she is amnesic, the pains recur regularly and disturb her momentarily, but she relapses into her doze; and if awakened, she will not remember the number of needles she has had. We carry her along in her amnesia with 1-400 of a grain, repeated sometimes every half hour or two hours until dilatation of the cervix is accomplished.

I have tried to give you the sum total of what was the conclusion of the discussion at the American Gynecological Society last week, *i.e.* that morphine and scopolamin is the method of choice in the first stage; and gas-oxygen or ether-oxygen is the method for the second stage. Each has its place—neither can do the work of the other with safety. Women have a right to a painless labor, if they can have it; and if you are willing to spend the time and they are willing to pay the price, they can have it.

PITUITRIN.

The use of pituitary extract, under one of the many trade-names, has become so common by the general practitioner, and the accidents from its use are so serious when the indications are misjudged, that it is time to sound a note of warning as to its danger.

In labor its indications are clear-cut. It may be used in *inertia-uteri*, to hasten delivery, when the cervix is fully dilated or nearly so, and the head is in the pelvis at or just above the ischial spines or on the pelvic floor, and the outlet diameters are ample to allow the exit of the

head. In accidental hemorrhage (*abruptio placentae*) when the head is engaged—after rupture of the membranes—small doses may contract the uterus on the fetal mass sufficiently for it to check hemorrhage from the placental site. In the third stage, after delivery of the placenta, to cause retraction and contraction of the atonic uterus—here, when combined with ergot, its effect is more lasting.

In Caesarean section before the incision is made into the uterus, an ampoule of pituitrin will minimize the amount of hemorrhage. If given before the operation is begun, the uterine spasm produced may be so great as to interfere with proper suturing. If an ampoule or two of pituitrin is given just before emptying the uterus of an abortion, the bleeding will be negligible and the uterus more easily emptied, because of the muscular contraction of the body produced. While it may have other indications in the hands of the enthusiast, obstetricians to-day are wary of its powers, and are using it in 1-3 and 1-2 ampoule doses, and repeating the dose, rather than employ it in large doses as recommended.

Its ill effects are the result of its spasmodic tetanic action on the uterus, and its indiscriminate use. Rupture of the uterus, extensive lacerations of the cervix and pelvic floor, and death of the fetus from interference with the feto-placental circulation, are admitted dangers. Rupture of the uterus comes from its use in the presence of pelvic or fetal dystocia or rigid cervix, when the presenting part is engaged and a misfit.

Lacerations from the precipitate labor induced by its use before the cervix is fully dilated. Fetal death from its use early in labor, where it is possible to loosen the placenta from its site and so produce accidental hemorrhage. We can never know in which case it will produce tetanic spasm of the uterus, hence, chloroform should always be at hand to relax the spasm, or the fetus may be asphyxiated in the second stage by the spasm of the uterus cutting out the placental circulation.

Use it only in small doses in the second stage, where there is no disproportion, or in the third stage, when the placenta has been delivered, and you will have no ill effects.

EXTRA-PERITONEAL CAESAREAN SECTION.

My next reference will be to extra-peritoneal Caesarean Section. All of you are doing Caesarean sections from time to time (and I am convinced that obstetrics today, even in the country, is past the stage where you engage to take the case and give the patient no antepartum examination) and when labor occurs, if the baby does not come through, you try *this* and *that* to solve the problem. We look upon the obstetric art as an exact science, based on exact indications and limitations—not as the man in Jersey, some few months ago, who engaged to deliver a woman,

a primipara, who had gone several weeks over-time with an immense baby. She fell into labor, and the doctor wanted to hurry labor, so he gave her a hypo. of pituitrin. This didn't help her—so he gave her another dose; then he found the cervix was still but slightly dilated, so he took her to a hospital, anesthetized her and did a version. In attempting the extraction through a flat pelvis, the shoulders and after-coming head got caught; so he turned her around and did a Caesarean. The baby was dead and the woman had sepsis. This is not obstetrics—it is licensed butchery. Obstetrics is knowing what you are going to meet, and preparing yourself to meet it.

Extra-peritoneal section was first introduced by Joerg, in 1809. Thomas, of New York, in 1870 modified the operation by making an incision parallel and just above Poupart's ligament, through which he pushed back the parietal peritoneum, and separated the bladder by pushing it to one side until the cervix and lower segment were exposed—this was incised and the baby withdrawn through this circuitous route. A large mortality from sepsis discouraged further attempts, until Frank revived the operation in 1906. Frank claimed that the modern Caesarean operation presented some unsurmountable objections in cases which had been handled:

First: That there was danger in soiling the peritoneum after labor had been long in progress and frequent examinations had been made.

Second: That infection of the scar in the upper part of the uterus weakened the scar and subjected the woman to the danger of subsequent rupture.

Third: Intestinal complications were common.

Fourth: That adhesions always occurred particularly if there was infection.

Peterson, Williams and Davis advise removal of the uterus, if the woman is suspected of being infected.

Frank claims the extra peritoneal section meets these objections. We have now done eleven without fatality. Hirst has done over 40. We have both adopted the trans-peritoneal procedure or the technic of Viet-Fromme.

With the woman in a high Trendelenburg to favor the lower segment being drawn upward, an incision is made in the median line from the pubes to below the umbilicus; the parietal-peritoneum opened; and the bladder reflexion exposed. This is nicked at the utero-vesical junction, and the bladder and the visceral peritoneum separated from the front of the uterus with Mayo scissors, exposing the lower uterine segment. The edges of the opening in the visceral peritoneum, including the bladder edge, are sewn to the opening in the parietal peritoneum with interrupted sutures of catgut, making the exposed segment of the uterine wall entirely extra-peritoneal after protecting the

edges of the wound with sponges; the lower segment is incised and the child and placenta delivered without soiling the peritoneal cavity—a large sponge, soaked in iodine, is now introduced into the uterus and the end pushed through the cervix, to be removed at the conclusion of the operation. The wound in the uterus is now closed with interrupted iodized catgut, and the edges of the two layers of peritoneum sewn together. The abdominal wound may be closed in layers or with through-and-through sutures of silk-worm-gut. If infection occurs, it is extra-peritoneal. We are sure many women can be saved from hysterectomy by perfecting this technic. One woman in nine has a contracted pelvis, and forty-three per cent. of those with contraction have the narrowing at the outlet. Funnel pelvis, therefore, is a relatively frequent cause of outlet dystocia, of the extensive laceration of the soft parts of the posterior segment, and of the persistence of occipito posterior positions on the pelvic floor. These are clinical facts. Hence, every woman should have her outlet measurements taken. The bischial diameter, the distance between the ischial tuberosities, taken with the patient in the exaggerated lithotomy position, should measure more than 8 c.m. to allow safe exit for the child. A short bischial, with narrow pubic arch, forces the head backward as it pivots out of the pelvis. This explains the large number of sphincter tears in women with funnel pelvis. A short transverse at the outlet must have a compensating posterior sagittal (the distance from the center of the bischial line to the tip of the coccyx) to allow delivery to take place.

Outlet contraction is solved by posture and pubiotomy. Posture—by having the patient lie in an exaggerated Sim's position, the posterior sagittal diameter is actually lengthened. Subcutaneous section of the pubic bone just inside of the pubic spine is not a formidable operation when done in properly selected cases. It is particularly indicated in outlet dystocia due to funnel pelvis, and in minor contractions of the pelvis, where the shortening is anterior-posterior and the conjugate vera not less than 7.5 c.m. Its successful application presupposes full dilatation of the woman's soft parts; hence it is never an elective operation but a procedure to be employed after a test of labor has been given.

Technic: after the vulva and inner surfaces of the thighs and lower abdomen have been surgically prepared and the woman anesthetized and in the lithotomy position, a small skin incision is made just over the pubic spine; through this a Döderlein needle is passed, which penetrates the fascia and is pushed along the posterior surface of the pubis, closely hugging the bone just internal to the line of the pubic spine, guided by the finger in the vagina until the blunt tip emerges under the skin in the labium majus; the skin is nicked over the tip and the needle pushed through. It is then

threaded with a Gigli saw, and redrawn through the track it has made. When the handles are attached to the saw, the bone is sawn through and the saw removed. The venous hemorrhage from the wound in the labium majus is controlled by packing the incision with gauze. The skin wound sealed with a collodion dressing. The child is then delivered spontaneously, or after pushing the head into the pelvis, the forceps is applied and extraction effected, while the assistants on either side hold the pelvis steady and prevent too wide a separation of the pubic bone. Soft-part lacerations are immediately repaired, and the operation is completed by encircling the entire pelvis with a six-inch wide belt of Z. O. plaster. The patient is then placed in bed and encouraged to lie upon her sides as much as possible; on the eighth day the plaster support is reinforced and she is allowed to sit up and walk on the tenth. My associate, Dr. Beach, has proven that in the standing position the pubic bones are brought in closest apposition, while the separation is greatest while lying on the back, unless the patient be in a trough-bed.

Our results and those of Williams have been so satisfactory, that I cannot but feel that many children may be saved by hebostectomy, who would otherwise be sacrificed to perforation.

THE CO-EFFICIENT OF SAFETY IN SURGICAL OPERATIONS.*

By HERBERT L. SMITH, M.D., NASHUA, N.H.

At the risk of being unpopular, I shall, during the few minutes allotted me, neither enumerate unusual cases nor describe novelties in technic. Surgical literature has been and, I presume, always will be crowded with such details, and that I take to be their proper place. Instead of personal experiences, therefore, I shall ask you to follow with me certain lines of thought and study which have recently occupied my attention.

Let me say at once that in what I shall have to present there will be nothing new or brilliant; very likely it may not be even interesting. To the average workaday man history is, I believe, a rather dry subject. We are so wrapped up in the task of the minute that we have little time or inclination to correlate our problems with those of earlier ages and previous workers in our special line of endeavor. Yet, such study, you will agree, makes for breadth of view, and therefore, increased efficiency; and in no sphere of activity is this more true than in our own profession, from the very fact, if for no other reason, that the greater part of the immense advance made in surgery during the

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past 200,—yes, 2000,—years, has taken place within the memory of those now living. I make no apology, therefore, for asking you to visualize with me the past and present trend of surgical progress, its aims, its past methods, its present tendencies and the lines along which future advancement seems most assured.

The aim of surgery has always been three-fold,—to save life, to restore function and to diminish suffering. In the present day of universal energetic activity, perhaps we should change the order and say that that surgeon best serves his generation who is most successful in prolonging human activity, relieving human suffering and saving life. Mere living has few attractions to the man who must suffer and cannot work.

"Safety First" has become the watchword of the day—at least in the pursuits of peace. The factor of safety lies at the foundation of every form of constructive activity, whether it be in the building of a bridge, the management of a railway system or the removal of an exophthalmic goitre. Those who deal with inert materials can compute tensile strength within the fraction of a grain; those who manage a mill must in addition take into account the fallibility of human brains; but we must weigh with all the means in our power the varying strength and weakness of vital tissues for which there is no foot rule, no scale, no invariable test. How have we met this problem in the past? How can we arrive at more accurate results with a consequent lessening of risk in the future?

From the beginning of time up to the present day there have been two, and only two, epoch-making discoveries which have contributed to the advancement of surgery. I refer, of course, to the discovery of anaesthesia and the recognition of the cause of infections. So far as we can see there is no likelihood that any third advance at all comparable to these two will come to our aid in the future. The varying factors of safety in surgical work have been distinctly and vastly different before and after each of these revolutionary discoveries. Let us examine with some care into the elements of which they consist in each of the periods into which surgical history naturally divides itself.

In the first two periods, which are (a) the pre-anaesthetic, which includes the whole period of surgery up to the discovery of ether, and (b) the period intervening between Morton's day and that of Lister, the whole trend of surgical endeavor was to prepare the operator for the patient. Those were the days of surgical boldness and of a sure and ready knowledge of gross anatomy and of rapid technique. It was the day of surgical fireworks in the operating room, but, alas, of long drawn out suffering, gangrene and sepsis in the hospital ward. Anaesthesia robbed the operation of its horrors, but the suffering from secondary complications had still to be endured.

With the third era of antiseptics and asepsis came the more complete recognition of the patient as an element to be reckoned with. The operator was no less trained, but on different lines. He need no longer measure his ability by the number of seconds required to do a Pirogoff operation, or his skill in tying the subclavian, but his technique had become more exact, if less spectacular. On the other hand, the patient was now being prepared for the operator, and not merely the operator for the patient.

The first, natural, and most striking result of the immunity from secondary catastrophes obtained through the beneficial influence of ether and asepsis was the great increase in the number and variety of human ailments which were transferred from the field of the internist to that of the surgeon. Whereas, in the early days, one could count the names of the great surgeons on his finger tips, they now were numbered by the hundreds and thousands. New operations, and newer modifications of new operations, and improvements on the latest modifications were chronicled month by month, day by day and almost minute by minute. At first a sort of chaos reigned; then order began to appear until, as in all such experiences with newly acquired knowledge, we have now come to a period of something akin to standardization. The general principles upon which any surgical intervention is to be conducted are now generally agreed upon. The work of two operators on opposite sides of the globe, under similar conditions, now differs only in unimportant details.

The immense number of surgical journals, the frequent visits of surgeons to hospital centers, the natural and proper desire of operators to make common property of any and every procedure which they may have found of value, have brought about a consensus of technique which is now universally accepted.

The medical student, after his four years of study and his hospital service, boldly (sometimes, alas, too boldly) grasps his scalpel and, without a quiver, undertakes delicate major operations which were undreamed of by the man who graduated twenty-five or thirty years ago; and this is so commonplace, so much a matter of daily occurrence, that I doubt whether we can take it in, whether we see the wonder of it. You younger men, I am quite sure, will never be able to appreciate it at its full value. Men of my own age, and those older, will never forget the nerve racking strain of even the earlier antiseptic days when the operating room was thick with the mist of carbolic spray, and it was still an awful thing to watch the occasional operation for ovarian tumor. Sometimes I think good might come if some of the terrible lessons of those days could be experienced by the young operator of today, who boldly rushes in where the gray haired veteran has learned to ponder long before he enters.

But if surgical technique has become perfected and the principles underlying surgical intervention so well defined, in what direction are we to look for progress? Wherein lies the advancement of the future? How can we increase still further the co-efficient of safety for our operations?

Obviously, we cannot in the future, as in the past, cut in half at a single stroke our death rate for a given operation. The surgeon deems it worthy of immediate record and publication if a new procedure is found which decreases his mortality by a fraction of 1%. It is this fact more than any other, which has been impressed upon me by a review of surgical progress during the past fifty years, and I believe it will be only after, and because of, a thorough appreciation on our parts of this vital fact, that we shall in every case that comes under our hand be led to seek for and apply to that individual case, all the possible, even minutest, factors which may, combined, tend to augment his factor of safety.

With the rapid increase of operable conditions and the general willingness on the part of patients to accept the verdict of a surgeon that an operation is necessary, I believe there is a risk that we shall run into a very grave danger. Surgery is becoming routine. A man shows the signs of an inflamed appendix. We say, "Have it out." Well and good, all will agree. The only prerequisite I demand is that we be sure, or reasonably sure, that it is his appendix which is causing the trouble. Again, we find that a woman has fibroids. Again, we say, or, at least I believe we are prone to say, "Submit to a hysterectomy." But should we be so sure? I, personally, have watched through a series of years many women who have carried fibroids without impairment of either health or comfort. Would all of these individuals have survived an operation and would they have been in as good health afterwards if they had undergone an operation? We cannot honestly make any such statement.

While it is a great aid to the surgeon that the laity have become so habituated to the word "operation" that they no longer hold back as formerly, and even frequently make their own diagnosis of, say, appendicitis and come to us requesting operation, yet this very willingness sometimes makes it difficult to be entirely fair with those who have some non-malignant trouble which *might* be operated upon, but in whom the risk of operation is greater than that of non-intervention. I have more than once, and sometimes at the risk of discrediting physicians who have sent cases for consultation, and sometimes, I am frank to say, with the result of alienating the good will of such colleagues, advised against any operative intervention. Of course, there are here, as well as elsewhere, tactful ways of getting around the difficulty, and it should be said to the credit of

the profession that few, if any of them, will say that any surgeon has the moral right to permit himself to be forced or over persuaded into performing any operation which he considers unnecessary or inexpedient. Our great hearted Nestor in the profession, Dr. Maurice Richardson, used to say that he would not perform any operation until he had satisfied himself as to the diagnosis and the necessity of interfering.

Certainly, the members of our profession are men of conscience, and whatever may be said in the non-medical press by one of its literary members in the way of casting slurs upon our disinterested honesty when a fee is at stake, I still believe there are few in our ranks who are influenced one iota by anything save the best interests of the patient.

What then are the elements of the factor of safety which we are bound to consider in our efforts to reduce our mortality and post-operative disability to the irreducible minimum? Obviously I can refer to but a few. I shall, however, have accomplished my aim if I am successful in focusing my own thought and yours on the fact that in any surgical case susceptible to an operation it is not enough merely to apply the *general* principles of our art. Each individual has the right to expect that we shall apply to his case any and all facts, however minute, which have a bearing on the necessity of operation and employ every expedient, of whatever nature, which may improve his chances for recovery.

The few points relative to increasing the co-efficient of safety which I shall have the time to suggest for your consideration will be touched upon very briefly under several heads.

1. *The Operator.* It should go without saying that no surgeon will undertake operations which he knows he is not fitted to perform. He should have had abundant opportunity to assist older surgeons in similar cases, or have done them himself under the eye of an experienced man. This seems almost too obvious to require statement, but, having viewed the readiness of the laity to submit to operations, and the apparent ease, as seen from the seats of the operating theatre, with which the hospital surgeon does even difficult manoeuvres, I believe there is no one in this room who will not agree with me that too much emphasis cannot be placed upon this point.

Again, no operator, old or young, should fail to perfect himself in technique by repeated practice outside the operating room. Pigs' intestines are not expensive. The great surgeons of the day do not feel it beneath them to rehearse a new procedure on the cadaver before risking the welfare of trusting patients.

Such obvious requisites as constant study of textbooks on anatomy and operative surgery, and of surgical literature, and periodical visits to large clinics and surgical centers, it seems

hardly necessary to mention except for the fact that many of us forget the counsel of William Mayo, who has stated that every surgeon should spend at least an hour each day in study, and that a two-weeks' vacation should mean twelve hours of extra reading.

2. *Preliminary Cure.* I have often thought that too little attention is paid to preoperative treatment. In the average case the patient enters the hospital the day or the evening previous to operation. I am not at all sure that this is best. Of course, in emergency cases, and in certain types of nervous individuals, possibly, a longer delay might not be wise. I am convinced, however, that a few days' rest in bed, either in the hospital or at home, would make for less post-operative discomfort and perhaps in a poor risk turn the balance in the right direction.

We have now a considerable number of two-stage operations. I believe that at least a part of their greater safety is due to the fact of a certain accustoming to the bed, so to speak, which they thus obtain. We all know how successfully Crile "steals away" a goat from the super-sensitive patient. One such individual, who was in a deplorable condition, I kept in bed several months before the operation, and with the most gratifying results. Elderly men with enlarged prostates, especially those with kidney or bladder complications, I have kept in bed weeks before and weeks after their preliminary drainage, and have found that they have escaped certain dangers and discomforts which have sometimes followed a more precipitate course.

Blood, or at least salt transfusion, should, if possible, be done previous to rather than subsequent to operations. I can recall cases where this should have been done.

Again let me suggest that while delay is often dangerous, too great precipitancy may be equally so. One of my most admired teachers at the Boston City Hospital, Dr. Post, taught me this lesson. As he used to remark, it was oftentimes good surgery to wait a while, and see what nature would do. Any fool can operate, but it may take a very wise, as well as courageous, man to know when to hold his hand.

3. *Anesthetics.* This requires but a word at the present time. Some day, doubtless, we shall have the perfect anesthetic. Perhaps nitrous oxide may come into general use, but as long as we use ether, let us get along with as little of it as we can. Dr. Gay always finished his operations with his patient semi-conscious and moving about. I used to compare his results with those of others who demanded more profound anesthesia, and I believe that his was the safer course.

4. *Operation.* Happy the man and lucky his patients who can operate rapidly and not hurriedly. Happy he whose touch is gentle and who thinks straight when he is at work. The

man who fumbles, who handles roughly sensitive internal organs, who wastes time in lost motions, gives himself, and mayhap his patient, away.

The day of small incisions, I believe, has gone. An ample opening gives a better field of vision, minimizes tissue injury and saves time.

5. *Convalescence.* One of the most striking features of operative work, especially abdominal, that has struck me in comparing the results of today with those of fifteen or twenty years ago, is the vast difference in the appearance and behavior of the patient during the post-operative week. I am somewhat at a loss how to explain it. Then it was the rule to have a terrible time of anxiety and constant working over the patient. Now it is the rule to have practically no post-operative trouble. I suppose it is due to the combination of many little improvements in management and technique before and during the operation which has led to this happy result. A portion of it I attribute to the more thorough clearing of the intestinal tract previous to the operation, but it cannot be entirely that, because many emergency operations are done without preliminary evacuation. If it is, as I suppose must be the case, but the natural result of better operative technique and shorter operations, then it is but another proof of my contention which this paper is intended to emphasize, viz., that success in surgery, itself no trifle, depends on the most scrupulous attention to trifling details.

On reviewing what I have written up to this point, I have a notion that it fails to reproduce exactly the picture I had in mind when projecting my paper. I fear you will carry away an impression of platitudes and generalities uttered by one who has already arrived at the age of ultra-conservatism or even old fogyism—the age when mental plasticity begins to give way to fixed ideas, with a resulting inability to distinguish between the radicalism, without which there can be no progress, and the rashness of the incompetent servile imitator, or the impetuosity of the young enthusiast whose ambition is like unto an eighty horsepower twin six racing motor, but whose brake hands need relining, or the rapacity of the occasional (only occasional I am glad to say) man who commercializes his profession. I hope this will not be your conclusion.

While I would have no hesitation in preaching conservatism, since a wise conservatism is, to my mind, the highest evidence of mental sanity, I have felt it proper to point out the dangers of an indiscriminate and unthinking resort to the knife as one of the errors into which we may unwittingly fall, and sometimes to the detriment of our patients and of our own mental poise.

Sir Arbutnot Lane is a wonderfully magnetic speaker and a master technician, but if we, who are not Arbutnot Lanes, either in

mentality or dexterity, begin to cut out our patients' colous, something will be pretty apt to happen. Why not wait a bit, meantime relieving urgent symptoms by less radical procedures, and see what the surgical masters will say about it, say three, five or ten years hence! Let us not be lacking in ambition nor yet in courage, but on the other hand, let us not lose our heads!

We of the rank and file will always find an abundant and varied assortment of accepted surgical procedures, sufficient to tax our best endeavors, and, as I have already said, and now repeat with added emphasis, we owe it to our patients, first of all, and to ourselves as well, to study diligently, intensely and eternally, to ponder wisely, unceasingly and honestly, to counsel with each other freely, often and frankly, to give advice in matters of vital moment only after we shall have exhausted all those means of obtaining a just insight into the case which we would demand were we ourselves the patient.

This means hard work, constant vigilance, everlasting study, clear thinking, a trained judgment, absolute honesty, and, not least of all, an unblunted conscience.

But these are, or at least they determine and enable us to augment, the co-efficient of safety.

SOME LIMITATIONS IN RÖNTGEN-RAY EVIDENCE OF GASTRO-INTESTINAL LESIONS.*

By FRANKLIN W. WHITE, M.D., BOSTON.

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It is more agreeable to praise than to criticize a new method of physical examination, but every clinical method has its limitations and we must know them.

We all recognize the great value of Röntgen examinations of the gastro-intestinal tract, the devotion of the radiologists, the patient, earnest, brilliant development of the technique, and the personal sacrifices they have made of health and even of life.

I am wholly in sympathy with the development of the method, and, through the kindness of Dr. W. J. Dodd and Dr. G. W. Holmes of the Massachusetts General Hospital, and Dr. Samuel Ellsworth of the Boston City Hospital, have used the fluoroscope and examined plates in hundreds of private and hospital digestive cases in the last two or three years.

So much has been said, however, about the unlimited possibilities of the method that the pendulum is swinging too far in one direction. This new, elaborate (and expensive) examination is altogether mysterious to the layman; he

is ready to believe that it will do anything, and many physicians seem ready to follow suit.

The most remarkable claims and statistics are accepted without hesitation. Practically all gallstones can be found and 98-100% duodenal ulcers, the normal appendix is always seen, early cancer can be diagnosed and exploratory laparotomy is a thing of the past.

We must guard against sweeping statements and must not be imposed upon by the fictitious accuracy of any clinical method. A clinician who is familiar with all sides of digestive work, with the Röntgen-ray as well as the laboratory, can best appreciate the value or limitations of any one method of abdominal diagnosis.

In their enthusiasm some radiologists are not critical and use their statistics in a partisan way to prove a point, rather than to search for truth. Isolated facts are not the truth, though they are the elements from which the truth is formed. The best aspect of a truth lies in the selection of the facts and the distribution of emphasis among the facts.

The new facts found by Röntgen examination are abundant and bewildering and call for new judgment, and bring new sources of error, for example, "ileal stasis," the evidence of adhesions, or "chronic appendix." What importance have they in relation to the symptoms in the case? Shall they be disregarded or operated upon? There is plenty of opportunity here for poor judgment with neglect on the one hand, and unnecessary surgery on the other. There is no question that the interpretation of this data is better in the hands of one who knows all the clinical facts. The clinician must train himself to interpret plate and screen findings.

The different kinds of Röntgen evidence have very far from equal value. An esophageal pouch, old cancer of the stomach, and calcified gallstone, are in a very different class from an early cancer, cholesterol stone, and intestinal adhesions. One class is clean cut, the other shades off into a very doubtful field. It may also be very hard at times to tell personal peculiarities from signs of disease.

There is great variation in skill and technique (and incidentally in expense) between private and hospital clinics and between large cities and small centres. I shall speak only of the limitations of the highest grade work.

Esophagus. In the esophagus spasm is intermittent, and may be entirely missed, or may be diagnosed as organic stricture or cancer. On the other hand cancer may be called spasm in the early stage before other deformity develops. Unless a cancer or other lesion is obstructive it may be missed, on account of the rapid passage of bismuth. The contour of small lesions is not distinctive.

Stomach. The value of the Röntgen-ray in comparison with the test meal in testing the motor power of the stomach has been much discussed. It is unfortunate we have no standard

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bismuth meal like the Ewald test breakfast. The bismuth or barium meals vary in character and amount and time allowed by different men. One uses cereal gruel, another buttermilk, another water; one a pint; one a half pint. Food may or may not be given during the first six-hour period. These results cannot be compared.

Carman in a recent valuable paper has compared the bismuth with other motor meals at the Mayo Clinic and finds a bismuth (6-hour) residue in 23% of a large series of cases, and a food (14 to 16-hour) residue in 13%. Ninety per cent. of the cases with bismuth retention had cancer or ulcer. It must be pointed out that this is not a comparison of Röntgen-ray and food tests, but of 6-hour and 16-hour retention. Naturally, six-hour retention is more common in pathological cases. If both tests are made in 6 to 7 hours, as was done by Levy and Kantor, the results compare closely in the surgical cases; and incidentally in a series of 185 cases, twenty-one per cent. had *no bismuth residue* but did have food residue, due to spasm or atony. This condition, missed by the Röntgen-ray and of little interest to the surgeon, is very important to the patient.

Ulcer. Some statistics claim 100% correct diagnosis in ulcer of the stomach. The facts are that in at least one-half, cancer cannot be ruled out. As Cole frankly says in one paper (The Negative and Positive Diagnosis of Cancer of the Gastro-Intestinal Tract): "For our purpose indurated gastric ulcer may be included under the term cancer of the stomach." The size of the ulcer helps, since McCarthy has shown that large ones are usually cancerous. "A lesion" can be diagnosed in the stomach with great accuracy, probably in 85% or more.

The diagnosis of organic hour-glass stomach from spasm is difficult at times. Atropin and bromides do not always exclude spasm. One woman of 24, found to have hour-glass stomach, was repeatedly examined with the Röntgen-ray, with a uniform result, even after full doses of atropin and bromide for several days, and definitely diagnosed as organic hour glass. Little gastric secretion was found and the stomach tube was passed before the fluoroscope to decide whether or not it reached the lower pouch. The hour glass vanished with the slight nausea due to the tube.

The diagnosis of a normal from an abnormal stomach is usually easy, but the diagnosis of reflex spasm from a lesion is hard.

Cancer. There is no difficulty in finding an old cancer of the stomach. Baetjer and Friedewald report 95% correct diagnosis in a series of 50; but 70% had a palpable tumor. Carman reports 95% in the Mayo Clinic with 67% palpable tumor. Abnormal Röntgen findings in cancer and ulcer, are more constant than any other single clinical finding, but they have one disagreeable feature; they may be present where no organic lesion exists.

In the diagnosis of early cancer of the stomach (the only kind we are really interested in) the Röntgen-ray like every other present clinical method usually proves a failure. Men of large experience now and then report an isolated case or two, that is all. The reasons for this are easy to understand. There are few or no early symptoms and patients are rarely examined early enough to find early cancer. In the *only proved case* in my experience where a Röntgen diagnosis of *early* (or *small*) cancer was made the lesion was at the pylorus, and caused definite obstruction (12-hour stasis) and brought the patient *early* to the doctor's hands.

Second, the early anatomical changes like the symptoms and other signs are hard to recognize; the earlier the cancer the less clear the evidence. This is equally true of small primary induration or the transition stage from chronic ulcer to cancer. In a series of 114 cases of suspected cancer of stomach we were just as often wrong as right, in the effort to diagnose early cancer with Röntgen-ray. Baetjer and Friedewald and others report a similar experience. A large, doubtful group of 20% or more is left after all examinations. Small lesions, which may or may not be cancer, can be found earlier and far more definitely since the use of the Röntgen-ray.

Cancers of the cardiac end of the stomach are peculiarly difficult to diagnose and are often missed on plates because this end of the stomach is only partly filled. It is practically impossible to diagnose cancer from syphilis of the stomach.

Duodenal Ulcer. Here we find the highest accuracy in the digestive canal; the pathology is practically all in one place, the first inch or so of the duodenum, and attention can be concentrated on this very small area. We get approximately 90% correct diagnosis of chronic duodenal ulcer with the best technique. Defects in the "cap" are very constant in chronic ulcer but adhesions may give every sign of ulcer; and spasm of the "cap" in such irritative lesions as gallstones or appendix may prove troublesome. In fresh bleeding ulcer of the stomach and duodenum the Röntgen-ray often shows no sign.

Gallstones. Very careful thorough work has been done in the last few years in improving gallstone photography and the interpretation of plates (both of which require the very best technique and the greatest experience) and many stones are found now which would have been missed a year ago.

Statistics of accurate diagnosis have crept up from 5 to 50% or even "practically 100%" in some hands.

To answer the questions, How many gallstones are found? How many are missed? present statistics are worthless for the following reasons:

The diagnoses in only a small portion of the

abdominal cases examined by the Röntgen-ray are verified. About 20% are verified by operation. Eighty per cent. are not. It is also misleading to base statistics on operated cases alone, for if stones are found the patient is operated upon; if stones are not found, the patient is not anxious for operation and often is not urged. In short, if stones are found, we know it; if stones are missed we do not know it.

How many are missed in this big unverified group? Some bold spirits will say none; some, 50 or 60%, and some, 90%.

Statistics of the percentage of gallstones ruled out by Röntgen examination (negative diagnosis) based on cases operated upon for other diseases (ulcer, cancer, appendix) have little value. Compare ruling out a stone in the urinary bladder in cases operated upon for cancer of the stomach. There is no relation. It is setting up a man of straw to knock down.

A positive diagnosis of gallstones has, in general, great value, a negative diagnosis has little value. This is not said to minimize the valuable work done, but we must not get ahead of our facts.

At the Mayo Clinic last fall I saw many cases operated upon and gallstones found, in which no Röntgen examination of the gall bladder had been made. On asking why, I was told that it was not worth while. If the patient had a clear history of chronic gall-bladder disease, he would be operated upon just the same, whether stones were found or not, and in some such cases a negative Röntgen report made it more difficult to get the patient operated.

A last new difficulty has been met. An occasional enthusiast in his eagerness to diagnose all gallstones (and keep his record high) finds them repeatedly when they are not present, thus defeating his object and taking a little more from the accuracy of the diagnosis.

Appendix. The Röntgen-ray shows pathology in the appendix region, the size, length, and position of the appendix, also kinks, adhesions, tender point, partial obstruction of ileum, stasis in the appendix, etc., but there is much uncertainty about the diagnosis (also about the pathology and clinical importance) of a "chronic appendix." My impression is, from hospital patients who have been operated upon, that a correct diagnosis is made in about one-half the cases; that a negative finding is usually correct, that a positive diagnosis needs to be strongly backed up by clinical findings. There seems little confirmation of George's statement that the appendix always fills if normal, and if unfilled is pathological.

Intestinal Adhesions and Stasis. There are no laboratory findings to show adhesions and no characteristic history. The best diagnosis is made by Röntgen-ray. They are often missed by the plate alone, but are rarely missed by a combination of fluoroscopy and plates. Of

course adhesions may kink the bowel at one time and not at another.

Intestinal stasis is important only if marked and if we have other clinical data to go with it. Ileal stasis is important only if 12 hours or more and only if the stomach empties promptly. This simple rule is often forgotten, but if the stomach takes 12 or 24 hours to empty, a fresh supply is being poured into the ileum for that period or longer. In short, we must figure from the time the stomach is empty, not the mouth.

In examining the colon in constipated people, we omit laxatives and may find great delay in the whole colon which is difficult to interpret. Is it the result of a sudden break in a long drug habit, or something more? It is a misfortune that medical men did not begin their Röntgen-ray work in abdominal diagnosis with normal people, then the wide normal variation due to food and muscle tone and innervation would be better known.

Let me emphasize, in closing, that the Röntgen-ray examination of the gastro-intestinal organs is one of our most valuable clinical methods, but like every other clinical method such as the physical examination of the chest or urine, or sputum, or stomach contents, or serum tests, it is beset on every side by limitations, and these must be fully recognized to get the most out of it.

REFERENCES.

- Baetjer and Friedenwald: Value of Röntgen-ray Examinations in Diagnosis of Cancer of Stomach. *Bull. Johns Hopkins Hospital*, 1916, xxvii, p. 221.
 Carman: Röntgen Diagnosis of Gastric Cancer. *Am. Jour. Med. Sci.*, 1915, ci, p. 625.
 Carman and Muller: Röntgenologic Determination of Gastric Motility. *Arch. of Int. Med.*, 1915, xvi, pp. 406-428.
 Cole: The Negative and Positive Diagnosis of Cancer of the Gastro-intestinal Tract. *N. Y. Med. Jour.*, 1916, cii, p. 26.
 George and Leonard: The Röntgen Diagnosis of Surgical Lesions of the Gastro-intestinal Tract, 1915.
 Levy and Kantor: A Clinical Study of Delayed Gastric Emptying. *Arch. of Int. Med.*, 1916, xvii, pp. 476-491.
 White and Leonard: A Ray Evidence in Early and Latent Cancer of the Stomach. *Boston Medical and Surgical Journal*, 1914, cixxi, pp. 512-517.

THYROID ABSCESS: (WITH MENTION OF TWO NEW SIGNS OF THIS CONDITION).

BY FRANK H. LAHEY, M.D., BOSTON.

THERE has been almost no mention in the surgical literature of thyroid abscess, and up to within a short time it was my opinion that it was a rare condition. Within the last few months, however, I have, among the considerable group of thyroid cases coming under my observation, had the opportunity of seeing and operating upon three cases of this sort, each occurring so typically that it seems worth while briefly to speak of this subject and at the same time speak of two signs which have been present in each of those cases, and of which I have seen no mention before.

In two of these cases there was a past history



DIAGRAMMATIC DRAWING.

A-B—Sterno-hyoid. C-D—Sterno-thyroid.

of tonsillitis and in the other the abscess appeared during recovery from a broncho-pneumonia. One case was sent to the hospital as a cyst of the thyroid, and other than the two signs to be spoken of later, had practically every appearance of that condition.

In all three of the cases there was swelling over the thyroid gland reaching across the neck and corresponding for the most part to the outline of the thyroid gland.

In one case there was some redness of the skin over the swelling. In the other two cases the skin was normal in appearance.

There was fluctuation in all three cases, although it was not easy to appreciate, since the pus is overlaid by two sets of fairly well developed muscles.

Temperature and leucocytes were present in two of the cases and in all three there was tenderness on pressure directly over the swelling.

The two signs spoken of above and present in all three cases are limitation of chin elevation and depression of the chin on the sternum when swallowing.

These two signs, I believe, are of great significance in cases suspected of thyroid abscess. They are brought about by the action of the sterno-hyoid, sterno-thyroid and omo-hyoid muscles on the abscess beneath them. From the diagrammatic drawing, one may easily perceive how the pain may result from tightening of these muscles, and how tightening as the result of swallowing may be prevented by depression of the chin upon the sternum.

It is evident that elevation of the chin results in pressure on the abscess at the point X from tightening of A-B and C-D, and hence the production of pain. If one recalls now that these three muscles act as depressors of the hyoid bone and thyroid cartilage in the act of deglutition, one can see how on contraction of those muscles pressure is exerted on the abscess again at the point X. If now the chin is depressed upon the chest at the moment of swallowing, one can see because of the approaching of point A to B, C to D, that complete contraction of these muscles, because of their laxness, will be impossible, and so pressure over the point X prevented or diminished. Depression of the chin upon the chest is the natural position, then, for these cases to assume on swallowing.

The treatment of these cases is simple incision and drainage. It is important, however, to dissect carefully down to the gland, under local anesthesia, and to cut the fibres of the sterno-hyoid transversely for a short distance on each side of the median line, as on account of the longitudinal tension of the sterno-hyoid and sterno-thyroid there is a tendency for any other incision to come together, thus interfering with drainage. On establishing drainage, recovery was rapid and uneventful in these cases.

AN ANATOMICAL FACTOR AS A CAUSE OF PYORRHEA.

BY CAROLUS M. CORR, M.D., LYNN, MASS.

WHEN we first began to realize the importance of foci of infection as the cause of obscure general disease, the teeth began to receive their share of attention. Pyorrhea has for some time attracted a great deal of consideration without any great progress being made toward its cure. Various theories as to its cause have been advanced: at one time it was believed that the amoeba was the cause, and that by the use of emetine or some other form of ipecac, the disease might be eradicated. How fallacious this theory was is testified to by the disappointment of many patients. It was then thought that the deposits of tartar upon the teeth and, possibly, an acid condition of the mouth, was the cause of the disease, and many very ingenious instru-

ments were devised for the removal of these deposits, admirably suited to the purpose for which they were intended.

There is one important fact in relation to this disease which does not seem to have received the attention which it deserves, and this is the anatomical relation of the parts. When we examine the tooth joint we find that it is the poorest joint in the body, being a peg joint. It, furthermore, has two systems of circulation, both of which are terminal. If we bear this fact in mind, it will be readily seen that anything that interferes with the circulation, which is here very easily interfered with, would furnish a point of least resistance for the invasion of any form of bacteria. When infection once gains entrance at the junction of the gums with the teeth it is likely to progress until it invades the alveolar process, and then we have alveolar abscesses in one or more places. If this factor of a point of least resistance at the junction of the gums and teeth is taken into consideration, the successful treatment of this disease would not seem to depend upon any combination of chemicals in the form of tooth or mouth washes, or upon any particular device for removing tartar from the teeth. In the treatment, it is necessary to follow the lines of the treatment of similar diseases in other parts of the body.

It is necessary to give drainage to the collection of pus, as you would to pus in any other part of the body. After the drainage is established, the action of the leucocytes will prevent the extension of the disease, but where the circulation is so poor, as it is very likely to be in gums affected with pyorrhea, the effect of the leucocytes upon the bacteria is necessarily very limited. While there may have been cases of pyorrhea among our ancestors, it can be confidently stated that the disease was not at all prevalent, and that it is undoubtedly due to modern methods of living, and modern cooking. Our ancestors lived upon coarser food, and used their teeth to masticate their food, rather than as ornaments, therefore they did not suffer to any extent from this disease.

The old man who picked out, by preference, the dry crust of bread, and used his teeth to crack nuts finally wore his teeth out, but he did not suffer from pyorrhea, or even decayed teeth.

Modern cooking prepares food in such a way that the average individual does not see the necessity of masticating the food. If he does use his teeth for that purpose, he does it as a part of some cult. The consequence of this is, that the teeth are not properly nourished; the circulation in the gums is poor, and the gums are not able to resist disease. We must remember here, as elsewhere in the body, that the individual cures himself. If the circulation is good the leucocytes take care of the bacteria, and the disease will be overcome.

If the circulation cannot be improved, the

disease will gradually progress: An illustration of this is furnished by the tooth which does not have another tooth with which it articulates; such a tooth rises up and becomes loose, and the circulation in the gums is so poor that it furnishes a culture ground for different forms of bacteria. Even these teeth can be improved, if an artificial tooth is furnished with which it can articulate. The tooth is pushed back into the socket by the act of mastication, the circulation improves, and the tooth becomes firm again. Of course all of the different methods of treatment have a beneficial effect, but until the circulation has been improved, the disease will recur again and again. I am in the habit of advising my patients to use a tooth brush on their gums, rather than on their teeth. This practice may at any rate temporarily improve the circulation. I am not at all sure that the old habit of gum chewing, which is now taboo in polite society, may not be a solution of the problem.

At any rate, we must do something to improve the circulation of the teeth, and gums, if we expect to retain our teeth, otherwise nature will take care of them as it does of other useless organs.

A FURTHER WORD ON THE STERILIZATION TREATMENT OF FURUNCULOSIS.

BY JOHN T. BOWEN, M.D., BOSTON.

IN the *Journal of the American Medical Association* of July 16, 1910, I published a brief notice of a simple method of treating furunculosis, which had proved effective in my hands in a large number of cases, including many in which the treatment by injection of vaccines had failed utterly. Starting with the premise that all furuncles are local and caused by the inoculation and auto-inoculation of pyogenic staphylococci, and are not produced by infection from within, the principle of this treatment is simply to keep the skin as far as possible sterile; as free from microorganisms as it is endeavored to maintain it in abdominal surgery. In order to effect this, the patient is directed to take a hot bath morning and night, scrubbing the whole body, including the head, while in the bath, with soap. It is best to use for this purpose a wash-cloth or a piece of flannel. This part of the treatment, I insist, must be done with the greatest care and regularity. After this thorough washing with soap and hot water, the skin is dried, and the whole surface again bathed, this time with a saturated solution of boric acid in water, with the addition perhaps of a small proportion of camphor water. Although boric acid is reputed to be a feeble germ-killer, my experience is that it is very effective in the case of pyogenic cocci that infest the skin, and it has the great advantage

tage of being entirely unirritating. Irritating antiseptics are to be carefully avoided in cases of pyogenic infection of the skin. After bathing thoroughly with the saturated boric acid solution, the skin is not to be wiped, but allowed to dry as it is. Then the individual furuncles are treated by dressing them with the following ointment spread on cotton or linen and bound lightly on: viz.

Boric acid	4.
Precipitated sulphur	4.
Carbolated petrolatum	32.

This procedure, thorough bathing and soaping, the application of the borated solution, and the dressing of the individual furuncles, is repeated, as has been said, *morning and night*. A further point of vital importance relates to the clothing that is worn next to the skin. *Every stitch of linen worn next to the skin should be changed daily*, and in the case of extensive furunculosis all the bed clothing that touches the individual, as well as the night clothing, should be subjected to a daily change.

This treatment has been uniformly successful in my hands in the treatment of the more or less chronic condition described as furunculosis, which means the repeated outbreak of furuncles, either singly or in numbers, extending over a period varying from several weeks to many months and even years. It cannot be claimed that this treatment at the beginning is a sure preventive of any further trouble. Nevertheless I have as yet seen no instance in which, where it was faithfully carried out, relief was not obtained within a reasonable time. Often, indeed, the succession of boils is interrupted at once. In other cases a few abortive lesions of small size may appear before the cure is complete. Naturally, this treatment must be continued for several weeks after the last evidence of pyogenic infection has appeared, and this fact must be emphasized to the patient at the outset. Many of the cases that have been referred to me have been treated repeatedly with injections of vaccines, in some instances with an apparent tendency to increase the lesions.

It may be objected that this treatment cannot be easily carried out. It certainly requires care and regularity, as it will fail unless scrupulously adhered to. The chief absorption of time is that required for a morning and evening bath. This is not too much to ask of a sufferer from an annoying and painful affliction, and my experience shows that it is gladly complied with by those seeking relief from a long course of eruptions. Most of the cases that have been treated by me are those in which the affection has been progressing for a considerable time, and who are willing to take almost any amount of trouble to obtain relief. Some writers, among others Riehl, have objected to bathing and to the use of antiseptic lotions in furunculosis as tending to spread the infection by transferring the microbes from one part of the skin to an-

other. This can be true only of a very careless and insufficient bathing, or application of the antiseptic, and could be just as logically used as an argument against every surgical employment of soap and water.

With regard to the treatment of individual boils in general, it is not my purpose to speak here. The various procedures recommended and adopted are many. The ointment that I have given above has proved, in connection with the general sterilization, an effective application, but doubtless other combinations may be equally good. Poulticing to any extent is certainly to be avoided as tending to favor the soil in which the staphylococci are implanted, and very early incision is unnecessary and harmful, if it has to be followed by close-fitting dressings.

The success that has seemed to me to be obtained by this simple procedure has led me to call attention once more to its merits. It has also proved effective in the hands of various physicians, who have so assured me by word of mouth or by letter. Dr. E. P. Joslin makes mention of it in his recent book on the Treatment of Diabetes Mellitus, an affection that so often produces the peculiar and obscure individual susceptibility that makes one's skin vulnerable to the staphylococci. He tells me that he has had a good many diabetic patients with more or less furunculosis, under his care, who have been greatly helped by this treatment. Other physicians who have adopted with enthusiasm the vaccine treatment, regard cases that do not respond to it as incapable of relief by any other method. It is to such as these that I appeal for a trial of thorough sterilization.

Clinical Department.

TREATMENT OF PERFORATED ULCER OF THE STOMACH WITH THE DUODENAL FEEDING TUBE.

By LESTER C. MILLER, M.D., WORCESTER, MASS.

[From the Surgical Service of The Memorial Hospital, Worcester, by courtesy of Drs. L. F. Woodward and William Rose.]

REPORT OF CASE.

Mr. F. is a civil engineer of about 55 years, married and the father of children; he has followed his profession wherever it took him, sometimes into the tropical parts of Central America; but so far as could be determined, neither climate nor occupation had anything to do with the development of the condition for which he came to the hospital. His family history is negative. He had the usual children's diseases, and gives a history of rheumatic fever.

For the past four or five years he has had pain at irregular intervals in the epigastric region, which

has usually been relieved by hot drinks. This apparently is all the digestive disturbance that had made much impression on his mind. During the week preceding his entrance into the hospital he had a dull pain in the epigastrium, which gradually grew worse until two days before entrance, when it became very sharp. This pain radiated to the shoulders. He had vomited frequently. The vomitus was brownish, and the attending physician, Dr. Bliss, said he had seen some fresh blood in it. His bowels had not moved for two days.

He was admitted to the surgical service August 3, 1915. At the time of admission he was in a condition of collapse. He had been transferred six miles in an ambulance and had suffered from the jolting. The surgeons, who saw him as soon as possible, made a diagnosis of either gastric or duodenal ulcer, with a probable perforation; but a chest examination showed what appeared to be loud pleuritic friction rubs over the side and front of the left chest. He breathed with difficulty, owing to the pain in his chest, but at the same time he complained of a sharp pain in his epigastrium.

The writer was asked to see him about an hour after admission to the hospital for the purpose of deciding what the pleuritic sounds indicated, whether a lung condition with abdominal symptoms, or a gastric condition complicated by pneumonia. The question of most importance was whether we had to do with an operative case, and if so, was it wise to operate at once, or should we wait and study the condition a little longer? The patient was found sitting up in bed, looking over some business papers and giving directions to a member of his family about business affairs. He was a thin, spare man of medium height, his hair and mustache slightly gray. At the time he was breathing with difficulty. This was apparently due to a sharp pain in his left chest, in the mid-axillary line, whenever he attempted to draw a long breath. The chest pain was more troublesome than the abdominal one. He leaned forward in bed to ease his pain and was sweating freely. His color was poor. The whole appearance was suggestive of shock.

A brief examination confirmed the previous findings of the interne and the surgeons. There was a loud friction rub over the base of the left lung anteriorly, extending back to the mid-axillary line. The abdomen was rigid over the whole epigastrium, and pressure showed it to be very sensitive. It was impossible to make out any tumor mass or other clues to the abdominal difficulty. There seemed to be sufficient evidence of perforation and peritonitis, but at the same time, the symptoms of lung involvement were so marked that the several consultants decided that surgical interference was unwise. It is still an open question in the minds of all the consultants whether this was a proper decision. Since studying the subject more carefully, the writer is satisfied that so far as he influenced the decision, his opinion was founded on an incorrect interpretation of physical findings. The friction sound heard at the base of the left chest anteriorly was probably not in the lung, but was between the distended stomach and the lower surface of the diaphragm. This symptom has been reported by Brenner in five out of six cases soon after perforation. He says it is caused by the fluid stomach contents mixed with air crowded between the diaphragm and the distended stomach, and that it

is characteristic of perforation only in the first few hours thereafter. The later developments of this case demonstrated clearly that there was no lung involvement.

For several days following entrance, the patient seemed to improve in his general appearance; his white blood count, which was 30,400 at entrance, the next day was 25,000 whites, the fourth day was 17,400 whites, the seventh day was 15,500 whites. The hemoglobin was 90%. The urinary findings were not important at this time. The upper abdomen still showed marked muscular rigidity and some tenderness on pressure. It suggested to all who examined it that there was either a tumor mass or a pocket of pus in the left upper quadrant and in the epigastrium. Finally, after eleven days' observation, it was the consensus of opinion that an exploratory laparotomy should be done.

Dr. Rose opened the abdomen in the right upper quadrant about an inch to the right of the median line. The liver presented in the opening and appeared much enlarged; it was covered on the anterior and lower surfaces with a thick gelatinous pus-like exudate, so thick it had to be taken out by handfuls. This pus pocket extended to the extreme left side well up into the upper left quadrant to the diaphragm. It appeared to be confined to the lesser peritoneal cavity. There were so many adhesions to adjoining parts that it was not safe or easy to separate enough of them to see more of the stomach than presented in the opening. No perforation or gallstones, or malignant growth could be found. Two drainage tubes were introduced, one from the upper corner of the cavity close to the diaphragm, the other from behind the stomach. An immediate examination of the pus while the patient was on the table did not show any organisms, but a culture showed a very slight growth of atypical streptococci.

Mr. F. rallied from the operation fairly well, and, aside from the usual post-operative discomforts, he seemed none the worse for the surgical interference. His bowels continued to move with the assistance of enemata; but the third day after the operation it was noticed that the discharges on the dressings had a foul odor. There were "curdy flakes" observed, and for several days the amount of the discharge was enormous, one day necessitating six changes of the dressings. The eighth day, the record states, there was a discharge of pus, of a thick white fluid and of some blood; note is also made that day of the excessive irritation about the edges of the wound. Up to that time the diet had all been liquid, but that day "soft diet" was given the patient. The next day some tapioca pudding, given at lunch, appeared on the dressings. The next day blueberries were given for an experiment, and they appeared on the dressings in three-quarters of an hour. Liquid diet was resumed.

The digestive action of the discharges increased and was a source of great distress to the patient. The edges of the wound were actually digested, and the surface of the skin for an inch or two about the opening was red and excoriated. It was possible to relieve the irritation a little with lime water washes, and other alkaline applications, but it was found finally that zinc ointment with an equal amount of starch added, was the most comfortable, and it was thought that he did not lose solution in the same way; the patient's thirst was severe, and he lost flesh and grew progressively

weaker. Sitting up in bed made him more comfortable, and it was thought that he did not lose quite so much food by way of the abdominal opening. After he began to sit up, his temperature, which had been slightly elevated, began to fall.

At this time, fourteen days after the operation, Mr. F.'s emaciation had become so marked, and he suffered so much from lack of proper water supply for his tissues that it did not seem at all likely that he could recover unless some means of feeding were devised at once. The writer had recently read Morgan's very enthusiastic account of his experiences with Einhorn's duodenal alimentation tube, and suggested that it be tried on Mr. F. The surgeons gave the medical staff a free hand to do as they pleased, and the patient was ready to grasp at straws, so that he was not only a very intelligent assistant, but a willing one. He quickly grasped the mechanical features of the apparatus, and made every effort to make it a success.

To quote from Morgan's description: "The Einhorn duodenal feeding and stomach test apparatus consists of a small gold bucket perforated with several small openings, and capable of being taken apart for the purpose of cleaning; a rubber tube of small caliber leading to the bucket; a rubber pet cock and a feeding table, an ingenious arrangement which rests over the glass of nourishment so that the food may be drawn up through one tube into a glass syringe and be forced slowly into the tube connecting with the duodenal tube, without disconnecting the syringe."

After the purpose of the tube had been explained, Mr. F. swallowed the little bucket and the tube as far as the first mark without much apparent difficulty or discomfort. He described the sensation as the same as a large dry tablet swallowed without water would cause. The first mark indicated the point on the tube when it may be supposed that the tube has entered the stomach; the second mark, the point when the bucket is at the duodenal opening; and the third mark the point when it may be supposed the bucket has entered the intestine. Mr. F. was lying in bed, turned slightly toward the right side. After swallowing the second portion of the tube, he was given some fluid nourishment and swallowed the tube up to the third mark. At the end of about five hours six ounces of milk were pumped through the tube, and within ten minutes it appeared on the dressings. This was the case with every feeding that day and the next. An x-ray picture was taken, and it showed the tube to have turned toward the left side of the stomach instead of the right. The tube was withdrawn to the first mark and solid food given by mouth, then the tube gradually swallowed until it reached beyond the third mark. The next day feedings through the tube were begun again, and the patient knew at once that the warm liquid reached into the intestine by the comfortable warm feeling in his abdomen about the level of the umbilicus. None of the eggnog appeared on the dressings, and the discharges decreased in amount at once. Subsequent feedings were given every two hours, and none of the liquids ever appeared on the dressings. In three days the patient began to appear brighter, he was noticeably stronger, his thirst satisfied, and his color improved. Through a misunderstanding of the order about solid food, it was continued three days after the successful feeding with the tube was begun. In spite of this, no solid food appeared on the

dressings. After the solid food was stopped, the discharges dried up even more, and the abdominal incision began to close up. Ten days after the tube feeding was started, the drains had been removed and in a day or two the wound had closed; but two stitch abscesses had developed meanwhile in the area which had been bathed in pus and the food discharges. These abscesses were troublesome, but did not very much delay the convalescence.

Twenty days after tube feedings were begun, the tube was withdrawn, and after trying liquids by mouth without doing any apparent harm, Mr. F. began to eat most things that he cared for, except some restrictions as to nitrogenous foods, because he showed some renal irritation. He had worn the tube constantly and, except for the first irritation of the esophagus from swallowing a hard pill-like substance, he had never complained of any discomfort connected with the tube in his throat or mouth; in fact, he hung the loop of the tube over his right ear and seemed to forget all about it, talking as easily as without it. By tube he had been fed milk and eggs, thin gruels, fruit drinks fortified with milk sugar, plain water, and pea soup. His weight "picked up" during the tube period, probably because his tissues were better supplied with water; he very rarely complained of hunger, and when he did it was more of the desire to "set his teeth into something."

Several interesting questions came up in the course of the treatment of this patient. One of the first was whether or not he was benefited by the operative interference. This, of course, was raised after the condition in the lesser peritoneal cavity was found, and it was seen that the pus was "drying up." Before operation there was only one opinion, and that was in favor of operation. The pus organisms did not appear to be at all virulent, and the cavity was well walled off from the rest of the abdominal cavity, so that the chance of the extension of the peritonitis was probably slight, if any. It is possible that the perforation had been sealed up by adhesions, and that it was pulled open in the attempt to evacuate the pus. Such a case is reported by J. W. Struthers. With the post-operative knowledge that we have of this case, it seems to the writer that this patient would probably have gone on to recovery without operative interference. But it is his opinion that such cases of perforation are the exception rather than the rule, and that immediate operation in all known or probable cases of perforation should be the working rule of both internist and surgeon.

The location of the ulcer was never definitely determined. The x-rays taken both before and after operation did not help to decide this point. It is the writer's opinion that the perforation was through the lesser curvature somewhat anteriorly. This opinion is expressed, first, because this is the well-known favorite site of perforations and second, because the escape of fluids from the stomach was less when the patient sat up in bed.

The most complete statistics of perforated ulcer of the stomach and duodenum, that were



TUBE IN STOMACH AND DUODENUM (PICTURE REVERSED IN PRINTING.).

at the writer's disposal, were published in *The Edinburgh Medical Journal* of 1913-14. These

were collected in the so-called Edinburgh district, which has a population of approximately half a million. The schedule of inquiry was first very carefully drawn up, and the analysis of the cases was made from these schedules. The two groups of ulcer were considered separately, the duodenal ulcers being investigated first. The period in the first instance was from 1908 to 1912, and in the second from 1908 to 1913.

Of the 200 cases of duodenal perforation 121 recovered and 79 died. The sex incidence was 8.5 males to 1 female. The youngest patient was a boy of 14, the oldest a man of 69. The main incidence of the affection was between the twentieth and fiftieth years. In the gastric series of 247 cases there were 142 recoveries and 105 deaths. The sex incidence was 2.2 females to 1 male. The youngest patient was a boy of 12-1-2 years, the oldest a man of 76. The largest proportion of cases occurred between the ages of 20 and 30.

Occupation did not appear to have any bearing in either series of cases. This was especially considered because of its bearing on the

operation of the Workingmen's Compensation Act.

Less than half, or 90 out of 200 duodenal cases, gave a well-marked history of previous digestive disturbance; while over half, or 146 out of 247 gastric cases, gave a history of marked digestive disturbance.

The location of pain was interesting from a diagnostic point. In the duodenal cases, in which this point was brought out, pain was usually felt towards the right side of the median line; while in the great majority of gastric cases the pain was in the epigastrium and, as a rule, toward the left of the middle line.

Vomiting was a much more common symptom in gastric than in duodenal cases.

There was agreement in practically every case of both kinds concerning the agonizing pain which accompanied the perforation. The writers made a diagnostic point of the difference in the onset of this pain and that of appendicitis, which is slow in developing and mild at first, while perforation pain is rapid and severe at first.

An interesting condition noted in nearly all cases was an apparent lull of a few hours in



TUBE IN STOMACH, NOT IN DUODENUM (PICTURE NOT REVERSED IN PRINTING.).

the symptoms after the first sharp attack had passed. Usually this was followed by symptoms of general peritonitis. The writers warn readers against the false security which this apparent cessation of symptoms may give the patient and his attendant. They advise immediate operation before general peritonitis develops.

The site of the perforation in the duodenum was made out in 120 cases. In 101 cases it was on the anterior surface within 1.1-2 inches of the pylorus, in 13 it was on the superior surface; and in 4 on the posterior surface. In the gastric cases 207 were near the lesser curvature; 2 were near the greater curvature, all of these on the anterior wall. There were 19 perforations found on the posterior wall near the lesser curvature.

The most common complications were of the septic pulmonary type, and subphrenic abscesses.

It will suffice to mention only two of the surgical measures employed. It was found that wiping out the abdominal cavity with dry sponges was a much more satisfactory measure than the use of salt solution. Second, in nearly all cases of infection of the general peritoneal

cavity suprapubic drainage of Douglas' pouch was established and, in the cases of more recent years, no drainage was attempted at the site of operation, but the patient kept in Fowler's position.

As might be expected, with greater familiarity with these cases and earlier diagnoses, each succeeding five-year period showed better results from operative treatment.

Since preparing the above report the writer has had an opportunity to attempt to feed another similar patient, in the service of Dr. Homer Gage, at the Worcester City Hospital.

The onset and other conditions of the case were so nearly the same as the above that they do not require detailing. It is enough to state that the stomach contents had been escaping through the abdominal incision for eleven days prior to the attempt to feed with the duodenal feeding tube. The patient's tissues were so very dry that it was almost impossible for him to swallow the tube. After the end of the tube was in the stomach it was difficult for him to get any more tube down the oesophagus; it stuck and doubled up so much *en route* to the stomach that one could not be certain whether

the tube finally found its way into the duodenum or not. X-rays were made, but for some reason they failed to show any of the tube or even the metal tip. The effort of having the pictures taken exhausted what energy the patient had left, and he failed rapidly after that, and died within fourteen hours.

The type of man made a great difference in the help given in introducing the tube in these two cases. The first man was alert and determined to recover; the second was easily discouraged and lost his grip early. It seems an obvious conclusion to the writer that if this method of feeding becomes necessary in such cases as these, the earlier it is begun the better are the chances for success.

It is more than a year now since the first patient was treated, and he is still living and in fair health. He suffers from minor digestive disturbances, but is able to attend to his professional work.

Book Reviews.

Diseases of Children: By EDWIN E. GRAHAM, A.B., M.D., Professor of Diseases of Children in the Jefferson Medical College, Pediatricist to the Jefferson Medical College Hospital and to the Philadelphia General Hospital, Philadelphia; Consulting Pediatricist to the Training School for the Feeble-Minded at Vineland, N. J.; Member of the American Pediatric Society. Illustrated with 89 engravings and 4 plates. Philadelphia and New York: Lea & Febiger. 1916.

This, the latest of the American text-books on the diseases of children, and the first for many years from Philadelphia, contains an immense amount of valuable material on the subject. It is manifestly the work of a practitioner of great experience in his specialty rather than that of a man who has devoted himself to laboratory investigations. It is, therefore, especially strong as regards the symptomatology and treatment of disease and should consequently be especially useful to the general practitioner. Pictures are relatively infrequent, but what there are are well-chosen and illuminating. The arrangement of the book is somewhat peculiar and symptoms are often given equal importance with diseases. The chapters on Infant Mortality, Heredity and Environment, Puberty and Dentition are somewhat unusual and well worth careful study. The chapters on Infant Feeding are in general very satisfactory and up-to-date. The classification of the diseases of the gastro-intestinal tract is complicated, and it seems to the reviewer confusing. While ex-

ception might be taken to the author's statements on many minor points, in general there is little to criticize and much to commend. The practitioner or student who thoroughly familiarizes himself with the contents of this work will certainly find himself well equipped for practice among children.

Diseases of the Eye. By GEORGE E. DESCHWEINITZ, M.D., LL.D., Professor of Ophthalmology in the University of Pennsylvania. Eighth edition, thoroughly revised and enlarged. Octavo of 754 pages, 386 text illustrations, and seven lithographic plates. Philadelphia and London: W. B. Saunders Company. 1916.

The eighth edition of this standard text-book keeps up to its reputation. A comparison with the previous edition shows how thoroughly it has been revised, and many new subjects introduced, such as Walker's method of Perimetry, Squirrel Plague Conjunctivitis, Anaphylactic Keratitis, Preliminary Capsulotomy, Iridodiasis and West's operation of resection of nasal duct. Col. Elliot has written the description of Corneoscleral Trephining. Several new illustrations have been added. These are only a few of the improvements, and the printing and paper are more satisfactory than in the previous edition. We consider this the best American text-book of diseases of the eye.

The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago. Edited by P. G. SKILLERN, JR., M.D., of Philadelphia. Philadelphia and London: W. B. Saunders Company. October, 1916.

This number still maintains its well-known characteristics. It contains more than thirty subjects and many illustrations. The first chapter is about thirty pages in length, and is called a Talk on Varicose Veins and Varicose Leg Ulcers. It is one of the best summaries of recent literature and modern practice which the reviewer has seen. Following this, by Dr. Murphy himself in June, 1915, is an interesting clinic given to the Railroad Surgeons, in which thirty traumatic cases were shown: most of these were end-results, illustrating the sorts of lesion which the railroad surgeon is most apt to encounter.

The October number also contains chapters on lesions of the various bones of the face and head; a series of benign as well as a series of malignant tumors, with operation; a number of genito-urinary cases, and the description of two interesting operative attacks upon the knee joint. The illustrations and text continue to be equal to the well-known previous standards.

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CHARLES FRANCIS WITHINGTON.

THE death of Dr. Charles Francis Withington, not unexpected after a trying sickness of several months, bravely borne, takes away one of the distinguished Boston figures in the medical profession. Since his graduation from the Harvard Medical School in 1881, Dr. Withington had been a practitioner, teacher and writer of wide experience and valued service. As a clinician he served the Boston City Hospital for many years, and as an internist and consultant he became skilled and extensively known throughout New England. From 1886 to 1891 he was an editor of the BOSTON MEDICAL AND SURGICAL JOURNAL, and many of his abundant contributions to the scientific literature of medicine have appeared in its columns. In 1914 the Massachusetts profession, in recognition of his eminent professional distinction, honored itself by electing him to the presidency of the Massachusetts Medical Society, an office whose duties he discharged for two years with able, characteristic, and effective thoroughness.

Dr. Withington was a gentleman, a kind and good physician, and a scholar; courtly, courteous, and beloved, as well as respected, by patients, colleagues and all others who knew him. His keen wit and good humor made him a delightful companion to his intimates. His brilliant literary style and scholarly attainments were an ornament to the columns of this JOURNAL. He was in all respects a man of distinction, and his loss is felt not less by his younger contemporaries than by his coevals in the community and the profession.

THE TREATMENT OF SYPHILIS.

SINCE the introduction of Ehrlich's arsenical preparations, salvarsan and neosalvarsan, there has been some modification of opinion as to the amount of certainty of cure attending them, and the amount of danger accompanying the use of these preparations; and although they are still accepted as the principal therapeutic agents in the treatment of syphilitic conditions, they are no longer depended on entirely to effect the cure. The old-time mixed treatment with mercury and the iodide of potassium still has a place within the interval between the salvarsan injections. Since the introduction of the arsenical preparations, the amount of treatment necessary to be taken by a patient has become by comparison relatively small, and the amount of disability in hospitals, or otherwise, has become almost negligible. Results in chronic cases are particularly marked after there has been over-treatment with mercury, where it seems that there has been established an anaphylaxis or sensitiveness to this drug, and manifestations aggravated rather than improved. Yet the failure attending the use of the arsenical preparations in cerebrospinal syphilis can be explained only on the ground that the drug, under the ordinary methods of application, does not penetrate into these recesses. Even the ordinary diagnostic serum reactions do not operate in this form of syphilis. The previously known "parasyphilitic" affections, such as tabes dorsalis or general paresis, are now understood to be active syphilis, in which the infective agent is hidden away within the cerebrospinal system, is not diagnosed by ordinary reactions for syphilis nor affected by the ordinary methods of treatment. The hidden character of the infective agent in these chronic luetic conditions of the nervous system has a parallel in the chronic malarial,

in which the plasmodia are no longer found in the general blood stream, but are hidden away in the usually much enlarged spleen.

The so-called "parasymphilitic" affections are now diagnosed by lumbar puncture in the very early stages, before the damage is so great that neither diagnosis nor treatment can avail to influence the course of the diseases. It is considered that the presence of leucocytes and an increase of globulin content are indications of the presence of cerebrospinal syphilis.

In general, the dangers of the use of these arsenical preparations are almost nil, particularly with the use of the neosalvarsan. However, it must be used guardedly in such conditions as renal insufficiency, advanced cancer, Addison's disease, arteriosclerosis, chronic intoxications, existing diseases of the nervous system, and in any condition where there is capillary degeneration. Ehrlich's contraindications are the triad,—aortitis, coronary sclerosis and myocarditis. To these may also be added diseases of the optic or auditory nerves, chronic meningeal congestions or diseases, and terminal cerebrospinal conditions. In any event the use of this drug, because it floods the system with a large amount of highly toxic and irritating material, is in the nature of heroic treatment, and must not be undertaken without a thorough knowledge of the patient and his constitution. And even in the classic contraindications it may yet be a matter for the judgment of the physician to determine on the use or on the rejection of these valuable preparations.

ORTHODONTIA IN MEDICINE.

WHILE the mechanical side of dentistry has perhaps developed far too rapidly when compared with the purely therapeutic side, it is to be given credit for giving birth to an almost new art—that of orthodontia. While the art is still young, it has already found a very important place for itself in dentistry, and, what is of significance to the medical profession, it is being successfully applied to the correction of certain medical conditions which heretofore seemed to be beyond remedy. Up to this time the orthodontist has busied himself with the correction of misformed, malformed and occluded teeth, particularly for esthetic or cosmetic purposes. But in the correction of these dental deformities it was found that not only was the en-

tire conformation of the face changed and the appearance improved, but that there was a marked improvement in the general condition of the child. The tendency to facial—bony—malformations in the civilized races is very great. In civilized races there has been, anthropologically speaking, a development of the cranium and the cranial bones, at the expense of the facial bones. Under these circumstances the maxillary bones become too small in circumference to accommodate comfortably the dental units. Malformation of the teeth, occlusion, and the like, occur as the natural result. It is needless to point out the effect upon the general health of the child of these badly formed and poorly acting teeth.

But the abbreviation of the maxillary circumferences, particularly of the superior maxillae, not only causes these dental malformations, but also produces a narrowing of the entire nasal and naso-pharyngeal cavities. There is a gothic vaulting of the palatal arch, deflection of the septum because its quarters are too close for it to stand erect, and, in general, a closer convention between all the bony parts. In the aboriginal races, on the other hand, in the negro, for example, even very profound bony malformation of these parts will produce hardly any obstruction to breathing. In them, if anything, there has been a development of the facial bones at the expense of the cranial.

It can be seen that the obstruction from these anthropologic variations can easily be, and usually is, confounded, with obstruction due to purely adenoid vegetations or local intranasal obstruction. It is so often a source of chagrin that the removal of apparently adenoid obstruction does not effect relief. Even before there is time to recover from the operation, there is said to have been a recurrence, when in fact little or no adenoid vegetation has been removed. Any temporary relief is usually due to the enlargement of the cavity by the removal of mucous membrane. It is in these conditions that orthodontia has been advised. Of course, orthodontic measures can be applied only to the young, before complete ossification has set in. Before this time rapid separation of the superior maxillae can easily be accomplished, and the nasal and nasopharyngeal cavities be insomuch widened. Improvement in breathing and in the general and mental condition of the child is perhaps more marked than after the removal of the classic adenoid obstructions.

MEDICAL NOTES.

HONOR FOR DR. FLEXNER.—Report from Paris on December 21 states that Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, New York, has been elected a foreign associate member of the French Academy of Medicine.

HONOR FOR DR. WALDEYER.—It is announced that on October 6, 1916, the eightieth anniversary of his birth, Dr. Wilhelm Waldeyer, who has been professor of anatomy at the University of Berlin since 1883, was made an hereditary peer of the German Empire. Many other honors were also conferred upon him. Dr. Waldeyer's health is excellent and he continues in active pursuit of his teaching work and investigation at Berlin.

FIRE IN A MEDICAL SCHOOL.—On December 7 a damage of \$50,000 was caused by fire in the building of the Indiana University School of Medicine at Indianapolis.

PREVALENCE OF DISEASE IN VIRGINIA.—The weekly report of the United States Public Health Service for December 15, 1916, notes that during the month of October there were in Virginia 1079 cases of malaria, 6 of meningitis, 25 of pellagra, 48 of poliomyelitis and 456 of typhoid fever. During the same period there were also in Virginia 501 cases of diphtheria, 377 of measles and 258 of scarlet fever.

PREVALENCE OF DISEASE IN THE UNITED STATES.—The weekly report of the United States Public Health Service for December 29, 1916, states that during the month of November there were in Ohio thirteen cases of meningitis, sixteen of poliomyelitis, 126 of smallpox and 324 of typhoid fever. During the same period there were in Louisiana 61 cases of malaria, 65 of smallpox and 105 of typhoid. There were 125 cases of malaria, 18 of pellagra and 34 of typhoid in South Carolina. In Minnesota there were 50 cases of poliomyelitis, 41 of smallpox and 72 of typhoid. There were 39 cases of poliomyelitis in New Jersey, 198 of smallpox in Michigan and 160 of typhoid in West Virginia.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The annual meeting of the American Association for the Advancement of Science was held in New York on December 26 to 30, 1916. At its closing session Professor Theodore Richards of Harvard was elected president for the ensuing year, and Dr. C. E. A. Winslow of Yale, vice-president, and head of the section on physiology and experimental medicine. The next meeting will be at Pittsburgh, Pa., from December 28, 1917, to January 2, 1918.

NEW YORK ACADEMY OF MEDICINE.—At its annual meeting on December 7 the New York

Academy of Medicine elected the following officers for the ensuing year: President, Dr. Walter B. James; vice-president, Dr. Edwin D. Craigin; trustee, Dr. Charles L. Dana.

ROCKEFELLER HEALTH COMMISSION.—In previous issues of the JOURNAL we have noted the expedition of five members of the International Health Board Commission sent by the Rockefeller Foundation on June 15, 1916, to study yellow fever and other contagious tropical diseases in Central and South America. This commission consisted of Dr. William C. Gorgas, Dr. Henry R. Carter, Dr. C. C. Lyster, Dr. Eugene R. Whitmore, Dr. William R. Wrightson and Dr. Juan Guiteras. Dr. Guiteras has remained at Barbados to investigate yellow fever conditions there. The other members of the commission have returned to the United States. The details of their investigation and their recommendations will be published through the Rockefeller Foundation.

EUROPEAN WAR NOTES.

SCARCITY OF PHYSICIANS IN ENGLAND.—At a recent meeting of the Glasgow Victoria Infirmary, according to a report from London on January 3, the opinion was expressed that before the end of the present war private practitioners in Great Britain will have become virtually non-existent and all civil patients requiring treatment must go to infirmaries. The *Lancet*, in a recent issue, says in this connection: "There must come a day, if the war is indefinitely prolonged, when the necessary economy of medical men can be obtained only by mobilization of the whole of the available supply, so that calls can be made upon individual services when and where required. It has long been felt that some such step might be taken and we believe that the general opinion of the medical profession, judging by the correspondence that comes to us, is in a similar direction.

WAR RELIEF FUNDS.—On Jan. 13, the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$255,971.05
French Wounded Fund	181,037.19
Armenian Fund	137,894.55
French Orphanage Fund	75,356.29
Permanent Blind Fund	63,803.33
Italian Fund	28,896.00
French Phthisis Fund	13,073.44
French Blind Fund	2,282.00

A NEW BELGIAN MEDICAL JOURNAL.—The establishment is announced of a new Belgian medical journal, the *Archives Médicales Belges*, to be published from the Cabour Military Hospital, Adinkerke, and to correlate all the medical activities of the exiled nation. The first issue is to appear in January, 1917.

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday noon, Jan. 13, 1917, the number of deaths reported was 270, against 327 for the same period last year, with a rate of 18.23, against 22.42 last year. There were 37 deaths under one year of age, against 43 last year, and 93 deaths over 60 years of age, against 115 last year.

The number of cases of principal reportable diseases were: diphtheria, 56; scarlet fever, 32; measles, 65; whooping cough, 6; typhoid fever, 2; tuberculosis, 77.

Included in the above were the following cases of non-residents: diphtheria, 3; scarlet fever, 2; tuberculosis, 7.

Total deaths from these diseases were: diphtheria, 3; whooping cough, 1; typhoid fever, 1; tuberculosis, 16.

Included in the above were the following deaths of non-residents: diphtheria, 1; tuberculosis, 2.

BOSTON HOMEOPATHIC SOCIETY. At the recent annual meeting of the Boston District of the Massachusetts Homeopathic Medical Society, the principal address was made by Dr. Benjamin T. Loring, the retiring president, on "Industrial Health Insurance." The following officers were elected for the ensuing year: president Dr. Walter T. Lee, Vice-Presidents, Dr. E. P. Ruggles and Dr. Catherine French; secretary, Dr. Harold Diehl, and treasurer, Dr. E. W. Smith.

MASSACHUSETTS COMMISSION ON MENTAL DISEASES.—The Massachusetts Commission on Mental Diseases, successor to the former State Board of Insanity, has recently issued its first annual report, in which emphasis is laid upon the rapid increase of the insane in this Commonwealth. Accommodation is now urgently needed for 658 more patients and 114 more nurses.

"On Oct. 1, 1916, there were 18,710 persons under the care of the commission, of whom 15,049 were insane, 2876 feeble-minded and 670 epileptic.

One of the most important of numerous recommendations is for the sale of Northampton State Hospital, selection of a new site and construction and furnishing of buildings thereon. A bill to this effect is submitted.

It is also proposed to extend and develop the psychopathic service by the establishment of hospital and outdoor units in different districts where institutions under the supervision of the commissions are located.

Several appropriations are asked for, after which bills are submitted as follows:

To provide measures to relieve shortage of nurses and employees in State institutions.

To authorize the commission to receive indigent and insane persons from other States.

To amend an act of 1916 relative to the com-

mitment and discharge of feeble-minded patients.

To amend the law relative to private hospitals, under which licenses shall be annually granted by the commission, to expire on the last day of the calendar year, and providing for a fine not exceeding \$500 for violation.

To amend the law relative to support of inmates in institutions under the supervision of the commission, temporary absence from institutions by permission and commitment of persons under indictment to State insane hospitals and the removal of insane prisoners."

SPRINGFIELD ACADEMY OF MEDICINE.—The January meeting of the Academy was held at 137½ State Street, on Tuesday, January 9th, at 8.15 p. m. Program:—

Dr. Walter R. Weiser: "A Few Hints About Your Malpractice Insurance."

Dr. Franklin W. White of Boston: "The Diagnosis and Treatment of Chronic Nephritis."

Academy Notes.

To those journals already in our library, we have added the following: *American Journal of Medical Sciences*, *American Journal of Obstetrics*, *Archives of Pediatrics*, *Surgery, Gynecology and Obstetrics*, *Medical Pickwick*, *Modern Hospital*, *Journal of the American Medical Association*.

We are indebted to Dr. H. A. Fiske for donating a number of medical books.

Some Academy bond holders have not as yet collected coupon No. 1. These were payable last July through any bank.

L. D. CHAPIN, *Secretary*.

Obituary.

WALTER JAMES DODD, M.D.

On the morning of the eighteenth of December, nineteen hundred sixteen, there ended a noble life of service and courage.

Walter James Dodd was born in London, England, forty-seven years ago. When a lad, he came to this country with his brother-in-law and sister, Mr. and Mrs. Charles Cummins, and attended the Cambridge schools. He then worked in the Chemical laboratory at Harvard under Professors Hill and Jackson, and in 1892 was appointed assistant apothecary at the Massachusetts General Hospital.

As soon as Roentgen made known to the world the discovery of the X-ray, Dodd began at the Hospital his studies of the ray, studies which were to make him an authority, and which were later to claim his life. The beginnings were small and disappointing; work at night with an agitated electric bulb with broken filament, a key, a camera, and photographic plates.

In 1896 he was made Hospital Apothecary.

Later this year the Hospital installed its first induction coil. The early tubes were very crude, and required hours and hours and days and days of pumping to secure satisfactory approach to a vacuum. He toiled, however, with his characteristic enthusiasm and perseverance, and was faithfully assisted by Mr. Joseph Godsoe. Four hundred plates had been made by April, 1897, when he was compelled by horrible burns of his face and hands to suspend his work. But he was undaunted and, as soon as he was physically able, gallantly resumed work. Neither was he daunted by much subsequent suffering nor by repeated periods of relinquishment enforced by physical disability. He continued his work cheerfully and with stoic fortitude to the end.

During this period of eighteen years, he submitted to nearly fifty operations of increasing severity, skillful conservative surgery done by his friend, Dr. Charles Allen Porter. Although he had had a severe operation only a short time before the departure of the Second Harvard Unit to France, and although his wound was still unhealed, he left with the expedition as he had agreed, and rendered tireless and invaluable service.

In 1900 and 1901 he studied at the Harvard Medical School. He was so much sought, however, for his knowledge of roentgenology that his studies were greatly interrupted, and upon advice he entered the Vermont Medical School, from which he graduated in 1908.

During this period, by special arrangement, he intermittently continued his work as apothecary, photographer, and roentgenologist at the Hospital, Mr. Godsoe serving in his absence. In 1908 he was officially appointed roentgenologist to the Massachusetts General Hospital, and shortly thereafter opened private offices for X-Ray work with Dr. Arial George. Soon afterwards he formed a partnership with Dr. Percy Brown, although they practised in separate offices.

Due to his valuable work, his department at the Hospital grew rapidly. Dr. George W. Holmes was made his assistant and soon his partner in private practice. His private practice likewise grew rapidly. He soon associated Dr. Lawrie Morrison with him, and recently Dr. Charles Edward Wells.

In September 1909, Dr. Dodd was appointed Instructor in the Use of Roentgen Ray at the Harvard Medical School, which position he held till 1913. He was then made Instructor in Roentgenology and held this position till his death.

In 1910 he married Miss Margaret Lea, of Moneton, N. B., who survives him.

He was a member of the American Roentgen Ray Society, American Medical Association, Massachusetts Medical Society, Aesculapian Club of Boston, and St. Botolph Club.

Funeral services were held at King's Chapel.

The honorary pall-bearers were Dr. John Collins Warren, Dr. Samuel J. Mixter, Dr. Henry P. Wolcott, Mr. George Wigglesworth, Dr. Frederic A. Washburn, Dr. Edward H. Bradford, Dr. Herbert B. Howard, Dr. Charles Allen Porter, Dr. James Homer Wright, Dr. Elliott G. Brackett, Dr. Hugh Cabot, Dr. Richard C. Cabot, Dr. Eugene Cadwell, and Dr. Gregory Cole.

A pioneer in his work, an authority in it, a martyr to it; a man affectionately esteemed; modest, unselfish, courageous; a tireless, serious worker with a rare sense of humor, a natural sweetness, and a big heart which loved humanity; such a man was Walter James Dodd.

Untimely taken, we bow our heads and thank the Almighty for what He granted him. And it was much.

Torr Harmer.

WALTER.

(WALTER J. DODD, M.D.)

Walter is dead. The generation of Boston physicians now in their prime were medical students when he first came to them. Walter he was then to everybody in the Massachusetts General Hospital and Walter he has remained. The medical degree which he took in order to make himself one of us professionally could not bring him any nearer. "Dr. Dodd" came slowly to the lips, "Walter" was always there.

He began at the hospital as apothecary. Also he was official photographer. As a side interest he photographed group after group of house officers, took each surgeon and physician in turn with his medical retinue, photographed every nook and corner of the hospital grounds and lovingly photographed the old Bulfinch front time and time again and everything picturesque that went on within and without. Those of us who had cameras, and most of us did in those impressionable days, went to him for instruction in the use of them. He developed our plates and films and more than matched our enthusiasm over them. His photographs illustrated our first medical papers. Such work was always overtime work and usually was done at a time inconvenient to him. From the beginning, everyone picked his brains, broke in on his routine, and retold his stories.

Walter was more than a willing and generous man. The writer has never seen one who was braver or stronger. For twenty years he knew his fate and fought it step by step with open and dry eyes. He called upon surgery to put up the most stubborn fight on record in this vicinity. He received his x-ray burn when the x-ray first came out, and its power both for good and for harm was unknown. The wonder of the process fired his ready enthusiasm and he labored day and night in the little stone vault beneath the Bulfinch steps. The ghostly proceeding was made even more so

by this room, especially when held at the dead of night. Some have said that he was careless of himself after he knew his danger. Perhaps he was. He could not always wait to take precautions. His work came first, himself last. How magnificent he was through it all! Bit by bit the trained fingers stiffened, piece by piece they were taken away. Both hands practically gone, his friends vied with each other in lending him theirs. At the dinner table or at the club the place of honor was at his side.

He was fun-loving and musical. His cheerfulness equalled his bravery; both were without a flaw. In his work he was a pioneer, an expert and a leader. A day or two before he died, his mind wandered to his summer in France with the First Harvard Unit, and he was busy supervising the making of hospital supplies. True to type, he was thinking of his birth country (he was English) and of others.

By a strange happening, Walter, with a spirit brimming with light, spent many of his working hours in the dark room, in the first years developing films and plates and later taking his X-rays. The room, however, could not be wholly dark where he was. The room cannot be dark where he is now. Soon, one by one, those of us who knew him will enter the dark room too,—and Walter will be there.

M.

CHARLES HENRY RICE, M.D.

CHARLES HENRY RICE died at his home in Fitchburg, January 5, 1917, at the age of 73. He was born in Ashburnham, Mass., February 19, 1843, attended the public schools of Ashby and Appleton Academy, New Ipswich, N. H., and was graduated from Dartmouth College in 1865, and from Harvard Medical School in 1866, in the class with J. F. A. Adams, Robert Amory, John Green and Edwin B. Harvey.

He joined the State Medical Society in the same year and began a practice that was to continue for fifty years, in the city of Fitchburg, where he became the first city physician in 1873. When the board of Health was organized in 1890, he was the first chairman, holding the office for three years. Dr. Rice was one of the original board of trustees of the Burbank Hospital and served it for twenty-five years in that capacity, being also a member of the medical staff, 1895-1900, and of the consulting staff after that date.

He served his city as a member of the school committee and as one of the trustees of the Wallace Library for a long series of years. From 1884 to 1897 he was surgeon to the Sixth Regiment, M. V. M.; he was a Mason and belonged to the various degrees; he was a charter member of the Rollstone Congregational Church and was prominent in the church activities. He will be missed in Fitchburg.

Massachusetts Medical Society.

To the Fellows of the Massachusetts Medical Society:

THE following is the draft of the amendment to Section 5 of the Workmen's Compensation Act as finally revised and accepted by the Committee on Workmen's Compensation Act, ratified by the Committee on State and National Legislation of the Massachusetts Medical Society; and this week presented to the legislature, by a petition signed by Dr. Samuel B. Woodward, Chairman of the Committee on State and National Legislation of the Massachusetts Medical Society; by Dr. J. Emmons Briggs, President of the Massachusetts Homeopathic Medical Society; and by Dr. Arthur N. Broughton, Chairman of the Committee on Workmen's Compensation of the Massachusetts Medical Society. The bill is numbered Senate Bill 135, and has been referred to the Joint Judiciary Committee.

"During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the Board, for a longer period, the Association shall furnish adequate and reasonable medical and hospital services and medicines, when they are needed. *The employee shall have the right to select a physician other than the one provided by the Association, and in the event that he shall be treated by a physician of his own selection, or, where, in case of emergency, or for other justifiable cause, a physician other than the one provided by the Association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the Association, subject to the approval of the Industrial Accident Board. Such approval shall be granted only after the Board finds that the employee was so treated by such physician, or that there was such justifiable cause, and, in all cases, that the services were adequate and the charges reasonable.*"

The proposed changes in the law represent the best thought of the two committees on the subject and they will work together in the effort to place the amendment on the statute book. Each individual physician should feel sufficient interest in the passage of this amendment personally to see or communicate with his Senator and Representatives and put the matter to them in a manner so unequivocal as to leave no possibility of a misunderstanding.

The proposed amendment finds its justification in certain evils which the present law permits, viz.:

(1) The Insurance Company "furnishes" the medical care, and under the famous "Pecott decision" need not pay for any service other than that so furnished (save in "emergencies or other

justifiable cause") whether that be adequate or not. In certain industrial centers the accident work is awarded to the lowest bidder without, so far as we have evidence, any consideration being paid to his special qualifications for the work. (Only three of the companies stand absolutely on this right, but they control more than half of the work.)

(2) If the injured workman refuses the service "furnished" he sacrifices the benefits of the Act, and in many industries he is compelled by his employer to accept the services of the insurance contract doctor or lose his job. To be compelled to submit to the treatment of a surgeon in whom one has no confidence, either because of his incompetence or harshness, or for any other reason, is an infringement of personal liberty and property rights, since a workman's body is his own, the employer only *hires his services and insures his ability to do work.*

(3) It allows the insurance companies to "work" the free clinics to their own profit.

(4) It discriminates against certain physicians, although all, by virtue of their licenses, are equal before the law, and arbitrarily deprives them of potential income from their regular patients when such patients become the victims of industrial accidents.

The section as amended is fundamentally right because based on the principles of liberty, equity and justice. Its insistence that the treatment be adequate will bear with equal weight on the ill-qualified insurance doctor and the ill-qualified, careless or dishonest physician of the workman's choice. It will bear as heavily on the surgeon of ability who delegates his work to an inefficient nurse as on the newest graduate. All depends upon the quality of the work—inadequate work need not be paid for. This should result in more efficient care of industrial accidents all along the line, as a consequence of which the costs of compensation should materially decrease. Its provision for the right to the services of a physician of the workman's own selection corrects the injustice to the workman of being compelled to submit to such treatment as the company provides, and the injustice to the physician of having his patients diverted from him.

The amended law should not operate to interfere with the excellent accident services which a few progressive industries maintain, because the ordinary workman has sufficient sense to accept treatment which is at hand, provided it be efficient and decent.

The objection that expense of medical care will be increased is met by the probability that shortening of the period of compensation will result from better service. Be that as it may, *if the costs of a law that is right and just are too great to be borne the law should be given up, not compromised by injustice and the exploitation of its intended beneficiaries by corporations*

interested primarily in the investment possibilities. Respectfully submitted,

ERNEST L. HUNT,

Member from Worcester District of the Committee on Workmen's Compensation Act of Massachusetts Medical Society.

The above letter, sent by Dr. Hunt to the members of the Worcester District Medical Society, so concisely gives the present status of the work done by the Committee on Workmen's Compensation, as to deserve publication.

ARTHUR N. BROUGHTON, *Chairman.*

Correspondence.

FAILURE TO REPORT OPHTHALMIA NEONATORUM.

Commonwealth of Massachusetts.

Board of Registration in Medicine,

State House, Boston.

January 3, 1917.

Mr. Editor:

The attention of the Board of Registration in Medicine has been called to the conviction of a registered practitioner of this state, for failure to report a case of ophthalmia neonatorum.

A hearing was given to this physician at which time he was given an opportunity to show cause why his certificate of registration should not be revoked, and his registration cancelled.

A consideration of all the circumstances seemed to justify this Board in not taking drastic action at this time, and the case was placed on file, to be taken up at any time if the future behavior of this physician is unsatisfactory.

The attention of the profession is called to the fact that failure to comply with a law so important as that requiring the reporting of cases of ophthalmia neonatorum, will be regarded by this Board as a serious offence, and may result in the revocation of the certificate of any registered physician who violates this law.

Respectfully,

WALTER P. BOWERS, M.D., *Secretary.*

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE FOUR WEEKS ENDING JANUARY 6, 1917.

December 2, 1916.

Asst. Surgeon Daniel Hunt, detached *Florida* to Navy Recruiting Station, Jackson, Miss.

December 13.

Surgeon H. E. Odell, detached *Yokohama Hospital* to home and wait orders.

Surgeon A. M. Fauntleroy, detached *Naval Medical School*, Washington, D.C., Jan. 29, 1917, to command *Yokohama Hospital*.

December 14.

P. A. Surgeon W. H. Short, detached *Oregon* to home wait orders.

P. A. Surgeon J. O. Downey, detached *Navy Yard*, Mare Island, Cal., to *Oregon* December 28, 1916.

Asst. Surgeon J. H. Durcett, to Navy Recruiting Station, New Orleans, La., January 2, 1917.

Asst. Surgeon E. C. Carr, to Naval Recruiting Station, Nashville, Tennessee.

December 16.

Asst. Surgeon K. E. Lowman, to Navy Recruiting Station, Scranton, Pa., Jan. 2, 1917.

December 19.

P. A. Surgeon G. E. Thomas, detached *Utah* to *Tahahasse*.

P. A. Surgeon H. W. Smith, detached *Nevada* to *North Carolina*.

P. A. Surgeon W. G. Steadman, detached Naval Hospital, Mare Island, Cal., to *Milwaukee*.

P. A. Surgeon G. F. Cottle, detached *North Carolina* to Bureau of Medicine and Surgery, Navy Department, Washington, D.C.

Asst. Surgeon H. Priest, detached *Tallahassee* to Navy Recruiting Station, Montgomery, Alabama.

Asst. Surgeon R. M. Waterhouse, detached *McIlvlie* to *Nevada*.

December 27.

E. O. J. Eyttinge, detached *Milwaukee* to 6 months' sick leave.

January 2, 1917.

P. A. Surgeon R. A. Warner, detached *New York* to *Connecticut*.

January 4.

Surgeon J. S. Taylor, detached *Connecticut* to Bureau of Medicine and Surgery, Navy Department, Washington, D.C.

P. A. Surgeon H. W. Cole, Jr., detached *San Diego* to home and wait orders.

SOCIETY NOTICES.

BOSTON MEDICAL LIBRARY in conjunction with the SUFFOLK DISTRICT MEDICAL SOCIETY.—A general meeting will be held in John Ware hall, Wednesday, Jan. 17, 1917, at 8.15 P.M. Subject: "Some Factors in the Hypersensitiveness of Man to Foreign Proteids," by Warfield T. Longcope, M.D., New York. Illustrated by the stereopticon. Light refreshments after the meeting.

C. FROTHINGHAM, JR., M.D.,
F. G. BRIGHAM, M.D.,
W. E. LADD, M.D.

Committee on Medical
and Social Meetings
for the Boston Medical
Library

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—The regular midwinter meeting of the Society will be held at the Boston Medical Library on Wednesday, Jan. 17, at 12 o'clock, noon. Papers: Dr. Donald B. Armstrong of Framingham, on "Framingham Community Health and Tuberculosis Demonstration"; Dr. W. R. MacAusland of Boston, on "Fractures from the Standpoint of the Orthopedic Surgeon," with lantern slides. Lunch will be served at 1.15 P.M.

LYMAN S. HAPGOOD, M.D., *Secretary*.

HAMPDEN DISTRICT MEDICAL SOCIETY.—The regular winter meeting of the Hampden District Medical Society will be held at Hotel Worthy, Springfield, Mass., on Tuesday, January 23, at 4 P.M. Papers for the afternoon: "Fresh Air: What It Is, and Its Effect on Children," Dr. A. C. Eastman; "Drainage," Dr. W. R. Weiser; "Intraspinal Treatment of Cerebro-Spinal Syphilis," Dr. P. Kilroy. Dr. Alfred Worcester of Waltham will be the guest of the Society at this meeting. Dinner at 6 P.M. at expense of the Society.

HERVEY L. SMITH, *Secretary and Treasurer*.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-sixth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, Jan. 26, 1917, at 8.15 P.M. The following papers will be read: (1) President's address: "Health Insurance in Relation to Pediatrics," Maynard Ladd, M.D., Boston; (2) "Congenital Malformations of the Bladder and Rectum," James S. Stone, M.D., Boston; (3) "Congenital Heart Disease," Charles H. Dunn, M.D., Boston; (4) "Are Carious Teeth an Etiological Factor in Heart Disease?" E. W. Barron, M.D., Malden.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*.

RICHARD M. SMITH, M.D., *Secretary*.

SCHOOL FOR HEALTH OFFICERS.

HARVARD UNIVERSITY AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

Special Lectures for the Month of January, 1917.

Attention is called to the fact that some of the lectures are to be given in the Department of Biology and Public Health, Massachusetts Institute of Technology. Such lectures are marked "M. I. T." The lectures marked "H. M. S." will be given in the amphitheatre of Building E, Harvard Medical School. All lectures will be given promptly at five o'clock.

Date.	Subject.	Lecturer.	Place.
January 11,	Sanitary Law.	Prof. Eugene Wambaugh.	M. I. T.
" 15,	Oral Hygiene.	Dr. W. H. Potter.	H. M. S.
" 16,	Sanitary Law.	Prof. Wambaugh.	M. I. T.
" 17,	Oral Hygiene.	Dr. Potter.	H. M. S.
" 18,	Sanitary Law.	Prof. Wambaugh.	M. I. T.
" 19,	Infant Mortality.	Dr. J. L. Morse.	H. M. S.
" 23,	Sanitary Law.	Prof. Wambaugh.	M. I. T.
" 24,	Veneral Prophylaxis.	Dr. Hugh Cabot.	H. M. S.
" 25,	Sanitary Law.	Prof. Wambaugh.	M. I. T.
" 26,	Infant Mortality.	Dr. Morse.	H. M. S.
" 30,	Sanitary Law.	Prof. Wambaugh.	M. I. T.
" 31,	Veneral Prophylaxis.	Dr. Cabot.	H. M. S.

The lectures on Sanitary Law will be continued in February.

RESIGNATIONS AND APPOINTMENTS.

DR. W. PORTER PRATT has resigned as clerk of the Quincy Board of Health and DR. MICHAEL T. SWEENEY has been appointed to succeed him.

RECENT DEATHS.

JOSEPH WEATHERHEAD WARREN, M.D., who died recently at Harrisburg, Pa., was born in Springfield, Mass., on June 24, 1849. After graduating from Phillips Exeter Academy and from Harvard College in 1871, he studied medicine at Leipzig and Bonn and became a practitioner of medicine in Germany in 1879. Returning to Boston in 1881 he taught for ten years in the Harvard Medical School and in 1891 was appointed professor of physiology at Bryn Mawr College. This position he held until 1914, when he resigned to become an official of the Pennsylvania State Department of Health.

W. C. KLUTZ, M.D., who died of typhus fever at El Paso, Texas, on Jan. 4, was a native of Salisbury, N. C. He was city health officer of El Paso and became infected while endeavoring to eradicate typhus fever brought to the United States frontier by Mexican refugees.

DR. GEORGE CLARY, who died on December 30, 1916, at New Britain, Conn., was born in 1830. He was graduated from Dartmouth College in 1859, and received the degree of M.D. from the Yale Medical School. Throughout the Civil War he served as surgeon of the Thirteenth Connecticut Regiment.

DR. WENDELL REBER, who died on December 30, 1916, at Philadelphia, was born in 1866. He was widely known as an ophthalmologist and was a former president of the American Academy of Ophthalmology and Otolaryngology. He was the only American member of the council of the Ophthalmological Congress at Oxford, England. He was a frequent and extensive contributor to current ophthalmological literature.

DR. CLAUDE E. WHEELER, who died of broncho-pneumonia on December 30, in New York City, was born at Montreal in 1864, the son of a physician. After graduating from Laval University, Quebec, he received the degree of M.D. from McGill University, Montreal. After practicing his profession for a short time at Burlington, Vt., he removed to New York City in 1890, where he became known as an ophthalmologist. In 1909 he was appointed editor of the *New York Medical Journal* and held that position at the time of his death.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

January 25, 1917

NEW ENGLAND SURGICAL SOCIETY

INAUGURAL MEETING, BOSTON, OCTOBER 5-7, 1916	111
PRESIDENTIAL ADDRESS. <i>By Samuel J. Mixer, M.D., Boston.</i>	111
A GROUP OF INJURIES IN MODERN WARFARE. <i>By John W. Churchman, M.D., New Haven, Conn.</i>	116
DISCUSSION OF DR. CHURCHMAN'S PAPER.	116
JEFURAL ULCER: A REPORT OF TWO CASES TREATED BY RESECTION AND END-TO-END ANASTOMOSES OF THE JEJUNUM. <i>By Edward P. Richardson, M.D., F.A.C.S., Boston.</i>	118
DISCUSSION OF DR. RICHARDSON'S PAPER.	124

ORIGINAL ARTICLES

VAGINAL DELIVERY AFTER CESAREAN SECTION. <i>By Nathaniel R. Mason, M.D., F.A.C.S., Boston.</i>	127
THE REASONS FOR THE RE-ENTRY OF HOSPITAL PATIENTS. <i>By Ernest Boyen Young, M.D., F.A.C.S., Boston.</i>	133
RECENT PROGRESS IN GENITO-URINARY SURGERY. <i>By Paul Thorndike, M.D., Boston.</i>	137

BOOK REVIEW

American Public Health Protection. <i>By Henry Babin Hemenway, M.D.</i>	139
---	-----

EDITORIALS

REPORT OF COMMISSION ON HABIT-FORMING DRUGS.	140
TUBERCLE IN TYPHOID FEVER.	142
NEW ENGLAND SURGICAL SOCIETY.	143
THERAPEUTIC VALUE OF RADIUM.	143
MEDICAL NOTES.	143

MASSACHUSETTS MEDICAL SOCIETY

COMMITTEE ON WORKMEN'S COMPENSATION ACT.	146
YOUNG INDUSTRIAL HEALTH INSURANCE BILL.	146

CORRESPONDENCE

THE THERAPEUTIC VALUE OF RADIUM. <i>J. Harper Blaschke, M.D.</i>	146
IS THERE A HYPHEN IN THE NAME OF DR. ARGYLL ROBERTSON? <i>John W. Parlow, M.D.</i>	147
THE BLOSSOM STREET HEALTH UNIT. <i>Ellen Hale.</i>	147

MISCELLANY

NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.	148
--	-----

New England Surgical Society.

INAUGURAL MEETING, BOSTON,
OCTOBER 5-7, 1916.

PRESIDENTIAL ADDRESS*.

By SAMUEL J. MIXER, M.D., BOSTON.

As the first President of this Society, and at this, its first meeting, it is fitting that I should say something of the reasons for its existence and the results that its founders hope to obtain.

There are many medical societies, large and small, from the great American Medical Association to the small journal or dining clubs, limited to a few members, some of general scope and some devoted to the special branches of the profession. These societies are absolutely essential to the life of the profession, stimulating intellectual competition and production, and giving their members a chance to advance new ideas and discuss old ones, as well as to encourage that personal contact and acquaintance, without which no body of men can do its best work.

The American Medical Association is too large and some of the special societies are of too limited a membership to afford a chance for much necessary work, and it has been felt that a society, representing the best effort of the surgical profession of New England was necessary to help raise the standard and aid in solving many

* Delivered at the Inaugural Meeting of the New England Surgical Society, Boston, October 5, 1916.

of the problems that are before us. Is it too much to expect this representative body of men to add materially to the sum of surgical knowledge and, at the same time, to educate themselves and each other, thus becoming more fitted to serve and aid their suffering and unfortunate fellow men.

One qualification for membership in this society has been considered absolutely essential—that is, that every member must be a Fellow of the American College of Surgeons. That association has endeavored to set a high standard for those who would call themselves surgeons, and though some of high rank and attainment have held aloof, its efforts are always in the right direction, and it should be recognized and encouraged in every possible manner.

In studying the problems of the present and future we must have a knowledge of the successes and failures of the past, for both have helped us on our way up the hill whose top seems even now so far, far above us. During the period of my professional life many problems have been solved, but is there one of us who does not daily meet the seemingly unanswerable? I say "seemingly," for let us hope that as we go on the now impossible may become possible. Mankind has advanced from the Stone Age to the present solely through the efforts of those optimistic souls who refused to recognize as impassable the barriers that blocked the way, and today many of these barriers lie behind us, and our vision, as we climb the hill and look back, has a much wider range than our forefathers had. We begin to think that everything in the world is better today than yester-

day, and that reason at last will triumph, when, in a moment, that primeval instinct that is common to man as well as beast, that causes one to prey on the other, that makes the wolf slay and the parent protect its offspring, asserts itself; and war, more widespread, more deadly, more awful because more scientific, demands the lives of millions of the world's best workers, and a loss of material wealth that must be felt for generations. We, as fortunate dwellers in a land which has so far escaped the calamities and sorrows of our neighbors, should face the fact that war will not end with the present struggle, and that if we are to continue our national life, we must be prepared to hold our own if necessary.

A few words as to the amount of surgical work done now as compared with that done in 1880, the year after I graduated from the Medical School. At that time a large part of the surgery of this region was done either at, or by men on the staffs of two hospitals. At the Massachusetts General Hospital there were, in 1880, 1003 operations and, though the number of beds was not very much greater in 1915, there were 4046. It must be remembered also that in 1880 many operations were entered on the books that now would be done in the out-patient department under local anaesthesia. Abdominal operations were very few in number and many regions of the body now regularly attacked were not invaded. As the surgical field widened, the number of hospitals, public and private, not only in the large cities but in the smaller cities and towns, multiplied enormously with a corresponding increase in the size of hospital staffs, while many more members of the profession took up surgical work. Neurological, pelvic and abdominal surgery were entering on their experimental stage; the gynecologist was not the trained surgeon of today, and many members of the profession in general began to do surgical work without proper training, tempted thereto by prospect of surgical fees or flattered by the idea that anyone who could amputate a breast (without dissecting the axilla) was a surgeon. The result was something not pleasant to look back upon. Much wretched work was done and will always be done if men, untrained in mind and hand, attempt to do a surgeon's work. It must be strongly emphasized that a surgeon is not born, but made. Thorough training of mind and hand, hospital experience under the control of able masters—these are absolute essentials and should be insisted upon in the future as they have not been in the past. It is the duty of this society to use its influence in this direction.

The border line between medicine and surgery is not well defined, and the true surgeon will use the training and knowledge of the internist and laboratory expert whenever it is possible to do so. Not every stomach or intestine that works badly is a surgical case, nor does every enlarged thyroid need operation. A surgical operation is a serious thing in spite of the idea

to the contrary so common among the laity, and should, like matrimony, not be entered into "lightly or unadvisedly," but when it cannot be avoided it should be done, carefully and thoroughly as befits a matter of life and death. A man is not conservative who half does an operation for malignant disease any more than he who does an unnecessary operation in what is really an inoperable case, and he who is guilty of the latter through his lack of judgment and overconfidence in his own powers is as guilty as he who does the former from lack of knowledge and skill. No operation is too formidable or dangerous if it offers a reasonable chance of cure; no operation is justifiable in an incurable case that has not a reasonable chance of palliation; incomplete operation in cancer is generally like the cultivation of a field—the crop grows the faster for it.

Were there no other problems to be solved, the treatment of malignant disease offers a field for study and research that promises to keep us busy for years to come, but I am optimist enough to believe that cancer will be conquered at last. The insistence on early recognition and prompt and radical operation is doing much, but even today the family physician will watch a bunch grow in a woman's breast or put salve on an ulcerated lip until the chance of almost certain cure is past and it is he, and not the surgeon who operates but fails to cure, who is guilty of a horrible death. Why will a man who does not know, and knows he does not, take such unnecessary and criminal responsibility? It is a well-established fact that non-malignant growths and ulcerations may become malignant; that neglected gallstones and gall-bladder infections will cause fatal pancreatitis, and yet how often we hear repeated the words "don't trouble that until it troubles you."

Early and thorough operation then is the best weapon that we have to use in this fight today. Serum therapy, x-rays, radium have each been claimed as cure-alls, but at the present only a few enthusiasts have any faith in their power to cure, except in those superficial cases that can be better treated. They may in proper cases and especially in properly trained hands do good, but up to the present time more lives have been lost through their improper use than have been saved. They have their place, and it is perhaps possible, I might almost say probable, that we may through them arrive at the goal we strive for, especially in those advanced cases that have not been recognized because of want of education of both physician and patient. Let us hope that we may be of some help in this fight with cancer, for victory means one of the greatest triumphs in the whole field of medicine.

Those of us who have done the greatest amount of work on the intestinal tract are the least satisfied with certain of the results obtained. Whenever a large number of operations have been devised for the relief of a certain pa-

thological condition, and new methods are constantly proposed having the same end in view, we may be sure that the problem is a difficult one, and that the ideal method has not been discovered. The surgical cure, final cure I mean, of intestinal stasis is a case in point, and though short-circuiting, resection, freeing of adhesions and all the other devices that have been suggested may work well in some cases, temporarily or permanently, we are grieved and disappointed in others, apparently similar, to find that water will not run up hill or, like the noted philosopher, find that both cats will go through one hole. The stomach is today probably the digestive organ most frequently attacked, as it is not particularly resentful to even maltreatment, and the various forms of operations upon it are well and favorably known to us all; but who can claim to cure every case of even non-malignant disease, though the operative procedure be faultless in technic as we understand it? Here again is work and thought for us all.

The war has brought many new problems to the surgeon as it has to the military man and the engineer. New methods of warfare have brought new forms of disease and injury, and old ideas and methods must give way to more modern and appropriate ones. Splendid work is being done on European battlefields and in European hospitals, and as Americans we can be proud to say that many from our own ranks have done their part, and done it well. Those of us who have had to stay at home envy those who could go and win honor for us all. May our American surgical units not cease their good work, or their numbers diminish, till a lasting peace shall come and right shall reign once more. More men are needed, and if only that we may be trained, it is not seemly that they should be called for in vain. We can help. Let us do it as many of our members have already done it, and are to do it again.

And now, closely connected with this idea and something even more urgent to us as Americans is the fact—a fact, not a theory—that while our means of national defence, to say nothing of offence, are lamentably insufficient, our medical corps to take care of such troops as we have, or may have, is still more numerically inadequate. Military surgeons are absolutely needed in this country, for should the unexpected, or at least, unwished for, happen and we be plunged into a war, there are very few medical men fitted to take their places in the service, and we should be worse off than during the Spanish war, and many of our best men would die from want of proper care. The men trained or to be trained in Europe will make a good leaven, but they are not enough to do all the work. The medical reserve corps was started to help fill the gap, but some of its momentum was lost, and now each and every one of us should do his best both by precept and example to put it in the place it should occupy in this country, a body of able, willing men, partially trained for their duty at

least, and ready for the call. The best of our younger men should be urged to join the Medical Reserve Corps as a duty that they owe to themselves and their country. If they do this, politics and politicians cannot deprive our sons and our brothers in the field, of proper medical care should the need arise, nor can they turn the work over to the contract surgeon who gets his job by favor, not merit. Do not let us wait unprepared until the day of trouble comes and we hear one arise and cry:

"For all we have and are—for all our children's sake
Stand up! and face the war—the Hun is at the gate."

Members of the New England Surgical Society: We welcome you to Boston on this our first meeting. We welcome you not as strangers or neighbors, but as members of the same family, offspring of those illustrious surgeons who did in past days the surgery for New England, and whose wise teaching and example has made it possible for us to carry on their work in hospital and school, in city and town throughout the country and the world today. We are proud of our corner of this great land, we are proud of our great men of the past, and their achievements. But the pace today is fast, and if we are to hope to lead in the race we must push ever forward and work with body, mind and heart. May this new society of ours help to keep us shoulder to shoulder as we press onward to overcome disease, superstition and cowardice; and as one by one we throw up our hands and fall out, may worthier, younger and better trained men be ready to fill up the ranks!

A GROUP OF INJURIES IN MODERN WARFARE.*

By JOHN W. CHURCHMAN, M.D., NEW HAVEN, CONN.

ONE of the most interesting features of the present war is the occurrence of nerve injuries without the typical symptoms hitherto supposed to correspond with them. It will be remembered that much of our present knowledge of the clinical side of nerve injuries dates from the work of Weir Mitchell during the Civil War, and it is quite interesting that the knowledge gained during the present war will probably lead to a revision of the data collected by him.

One of the most striking instances of this sort is injury of the musculo-spiral nerve unassociated, in some cases, with sensory disturbances, and in others unassociated with motor disturbances. The explanation of these cases doubtless lies partly in the incorrectness of our present ideas as to the cutaneous distribution of the musculo-spiral nerve, and partly in the occurrence of variations in the normal arrangement of the nerve—variations which may be commoner than is generally supposed. Lesions of

* Read at the Immortal Meeting of the New England Surgical Society, Boston, October 5, 1916.

the musculo-spiral without disturbance of sensation on the dorsal aspect of the lower forearm are doubtless due to the fact that the injury is below the origin of the branch of the nerve, called by the French the dorsal anti-brachial cutaneous, which arises from the nerve high in the arm. But there are other cases which are not so readily explained. A case, for example, occurred in the hospital at Juilly, in which there was complete division of the musculo-spiral nerve, the ends of the divided nerve being plainly visible in the wound. In spite of this fact there were no sensory disturbances in the hands, but a very curious feature was that on electric stimulation of the distal portion of the nerve, pricking was felt in the portion of the skin of the hand usually thought to be supplied by the musculo-spiral. A case of this sort can be explained only by assuming a double nerve supply to the skin concerned.

Another very interesting type of nerve injury is that associated with concussion. A soldier, for example, who was being transferred from one garrison to another was seized on the train with complete retention of urine, and sent to our hospital for this condition. The history was that nine months previously he had been near an exploding shell, but had not been struck. The shock had rendered him unconscious, and during the next few hours there had been complete retention of urine and complete constipation. Since that time, though there were no bodily injuries whatever, the patient had been unable to void and continually used a catheter. On examination we found him entirely anaesthetic to pain, touch, and temperature in the regions of the skin supplied by the last dorsal and first sacral segments. The concussion had affected not only the urinary centre, but also the sexual centre, and had resulted in a complete loss of both functions. The condition was entirely due to spinal shock, curiously limited to the lower portion of the cord. Apparently it was associated with a permanent lesion, as there had been no improvement of symptoms in the months which had intervened since the original trouble.

One of the commonest forms of nerve lesions seen in an active war hospital is the neuroma following a grazing wound, or a partial section. These injuries lead to the characteristic carrot-like bulbs, which are associated with paraesthesias, sometimes exceedingly painful, and paralysis more or less complete. For these lesions surgical intervention is indicated, but it may be said that the results of nerve sutures and nerve plasties during this war are on the whole pretty unsatisfactory. It is obvious that the two factors essential for a successful nerve suture, namely, intervention promptly after the injury, and absence of sepsis, are in this war usually absent. All the wounds are infected, and owing to the infection and to the fact that it is necessary to move patients about from one hospital to another a good deal, it is rarely pos-

sible to operate on these cases at a favorable time. Recent reports from the German side have indicated better results in nerve sutures than my experience in France would have led me to believe possible. It is conceivable that the excellence of these reported results is in part due to the fact that the German specialized hospitals are nearer the front than the French, and that their neurological cases receive treatment early.

A third curious nerve condition seen in the present war is the presence of high-grade sensory disturbance entirely confined to the terminal portion of a nerve. A sergeant, for example, who entered our hospital complained of almost intolerable pain and tenderness over the inner aspect of the dorsum of the foot, the tenderness being so acute that stockings could not be worn nor the pressure of the bed clothes borne. The man had three shell fragments along the sciatic nerve in the thigh, popliteal space, and calf, but the symptoms were entirely localized to an area on the foot which could be covered by the palm of the hand. Many other cases of this sort were seen; in some of them the lesion being larger and the area of sensory disturbance smaller than in the one just quoted.

A condition frequent in the present war, but relatively rare in civil practice, which has demanded a good deal of attention, is the mild erysipelas often developing about the wounds. All the wounds seen in a base hospital in France are badly infected. But in my experience serious erysipelas was, curiously enough, rare. We did, however, have many cases of a mild variety, and the disease sometimes developed weeks after admission. These cases were characterized by a blush of the skin about the wound, spreading rapidly, and often ending in an abscess in the cellular tissue, but the associated symptoms were usually mild, and the cases always ran a favorable course. This subject has received study, particularly at Ris Orangis, and it is probable that the disease is due to a streptococcus morphologically different from the usual varieties.

So much has been written about trench feet that this condition is now familiar to everyone. A great deal of study has been given to the etiology of this condition, and a number of observers have regarded it as infectious in character. Recently, a French bacteriologist has isolated an organism from the disease which allies it in his opinion with Madura foot. These findings, however, are difficult to accept, for careful bacteriology is extremely difficult in soldiers who are as filthy as the present French army is, and all the clinical features of trench feet suggest a disease that is vascular in origin. It is curious, however, that the majority of cases have occurred in the younger and not in the older soldiers. The factors concerned seem to be cold, wetness, and possibly the application of too tight puttees. The excellence of the present organization in trench warfare makes it possible for soldiers to care for their feet more in-

telligently, and the incidence of trench foot grows less and less.

In addition to the types of cases which occur with very obvious gangrenous lesions, soldiers are also seen who after exposure of the feet to cold and water, though they present no lesions whatever, suffer almost intolerable pain in the feet. These cases suggest the clinical picture of the early stages of thrombo-angiitis obliterans.

Probably the one chapter of surgery which has made the most distinct advance owing to the activities of the present war is the chapter which has to do with the localization of projectiles. All civil surgeons who have searched for a foreign body know how unsatisfactory this search usually is, but the development of methods of localization in the war has transformed this search into one of the exact surgical manoeuvres. A foreign body impervious to x-rays can now be localized with the greatest exactness, so exactly indeed that under local anaesthesia a needle can be inserted directly on it. This method of localization consists in the development of the well-known method previously used, in which the position of the foreign body is determined by the intersection of theoretical diagonals drawn by means of radioscopic examination through the eyes of a metal compass. The only contribution which I made to this method was the substitution of two separate lead rings for the caliper compass. This improvement, which seems rather trivial, as a matter of fact renders the technical side of the operation much simpler.

It is probably not generally realized that during this war a gigantic clinical experiment on a scale hitherto undreamed-of has been made as to the efficiency of prophylactic injections of tetanus antitoxin. In the early months of the war the French sanitary organization, caught unprepared, was unable to cope with its huge problem; and during these days the wounded, often lying for hours in the trenches before being rescued, and then spending days on an ill-fitted sanitary train, usually failed to receive the prophylactic injection. At this time, tetanus was very frequent, very fatal, and contributed largely to the mortality. The French sanitary organization, however, soon adapted itself in an extraordinary fashion to the needs of the war, and at the present time is handling its gigantic problem in a manner that should command the admiration of the world. Every wounded man who runs the slightest risk of developing lock-jaw receives a prophylactic injection immediately at the front. As a result tetanus, so rife in the early days of the war, has been practically eliminated, and only very occasional cases are now seen. These occasional cases are usually of a mild, chronic type. The extraordinary thing is not so much that the soldiers who need it receive this prophylactic injection, but also that it is seldom given uselessly; and when one bears in mind the terrifically strained conditions under which surgeons have to work at the front,

one can only be deeply impressed by their sagacity and discretion. During my stay in France I saw only one case of tetanus, and this was the rare type entirely localized in the right arm, and developing nearly two months after the original injury. This patient ran a chronic course, but when his symptoms increased a large shell fragment lying in the shoulder was localized and removed, and he at once recovered.

The French helmet has, of course, by this time become familiar to everyone. It has been copied by the English, who use the type which suggests so strongly the army of Oliver Cromwell, and has the same purpose as the French helmet. The effect of the helmet on scalp wounds has been very interesting. It has increased their number. This means, of course, that the soldiers who would, in the early days of the war, have been killed by gunshot wounds in the head now escape, receiving, instead of mortal injuries, only slight scalp wounds. (A photograph was shown of a helmet with a perforating bullet wound, and the photograph of the soldier showing a slight scalp scratch.) There has been some discussion recently as to the ultimate value of the French helmet. Doubt has been cast on its importance in recent publications. But at the time I left France it was still regarded highly.

Everyone is familiar with the method by which the soldier reaches the base hospital from the front. Photographs of ambulances surrounded by doctors and nurses are common in the newspapers of the day. It is, however, not generally known what becomes of the patients when they leave the base hospitals, the interest in the soldier apparently dying out as soon as he arrives from the trench, and not following him when he leaves the base. The patients in the base hospital may be divided into three groups: The cured ones are sent to a clearing depot from which they go to their homes for a rest of seven days. They are then required to report to their depot of matriculation, where they undergo a period of training of about three or four weeks, and are then sent back into active service, either in the trenches or elsewhere. The permanently disabled cases are required to appear before a Council of Reform, which examines them, and, if the disability is regarded as permanent, reforms them; that is to say, sends them back into civil life, from which they cannot again be summoned to military service. At the time a patient is reformed in this way a pension is allotted him by the Council of Reform, representing a percentage of his wage-earning capacity proportional to what the Council deems he has lost in wage-earning ability. For example, a farmer who comes from Bordeaux and was probably earning, say, ninety francs a month, has lost three fingers of the left hand. He will be now regarded by the Council as capable of earning only sixty francs, and he is, therefore, given a pension of thirty-three and a third per cent. In this way France is

now solving, and finally solving, her pension problem, and will have no bickering on this subject after the war is over.

The convalescent patients in an active base hospital, like the one of which I had charge at Passy, are moved out as soon as possible in order to keep the beds empty for fresh, seriously wounded cases from the front. This means a good deal of strain on the transportation system, but this is now so well organized that the cases are taken from hospital to hospital without much delay. The magnitude of the transportation problem may be inferred from the fact that France now has four hundred and fifty thousand medical military beds mobilized. The convalescents at Passy were sent either to an interior hospital for further convalescence or to a specialized hospital (for example, in injuries of the ear to an otological hospital), and in this way gradually worked their way back either into civil life or into the auxiliary army.

One very interesting development has been the establishment of Mohammedan hospitals. The Mohammedan insists upon the observance of many customs which it is practically impossible to carry out in a hospital. For example, he will not eat food on which a shadow has fallen while it is being served. Traditions of this sort make constant, annoying problems in an ordinary hospital, and France has solved the difficulty by establishing special Mohammedan hospitals, one of which is situated in Orleans.

[NOTE: This paper was illustrated by lantern slides, showing photographs and paintings of the various conditions described.]

DISCUSSION.

DISCUSSION BY DR. ROBERT B. GREENOUGH, M.D.,
BOSTON.

IN regard to the cases of mild erysipelas; in the cases that we had in Paris in April, May and June, 1915, I was not struck with the mildness of the erysipelas. On the other hand, there were some cases of erysipelas which were quite as serious as any others that I have seen elsewhere. On the other hand, the condition of which Dr. Churchman speaks reminds me very forcibly of the cases of erysipeloid infection which we have been seeing at the Huntington Hospital in connection with the treatment of cases of cancer of the face. Patients with such lesions are naturally obliged to dress their own wounds and do so under instruction, but they frequently infect themselves with mild infections, and in the course of a considerable period of time—six, eight, or ten months—develop from time to time an erysipeloid infection which adds much to their discomfort, but which does not really appear to produce any serious re-

sult. We have gone so far as to consider the use of vaccines with the idea of preventing the recurring attacks, if it might be possible to do so.

One other point in regard to localization of foreign bodies by x-ray, I would like to mention. When I was in Paris we went to visit Dr. Tuffier. He was operating that morning on a patient who had a rifle bullet somewhere in the region of the left hip. Localization of the projectile had been made by the x-ray operator, and by this method of converging lines, was made graphic by an apparatus which, resting on four points of suspension upon the patient's body, had wires which could be placed in exactly the same lines as the lines projected in the x-ray. Instead of estimating where these lines crossed, this form could be arranged in accordance with the x-ray in such a way that the rods could be projected and carried directly to the point where the bullet rested. The apparatus could be sterilized. The incision was made over the neck of the femur, immediately in front, and the rod was advanced through this incision to the point where the bullet was supposed to be. The front of the neck of the femur was exposed, and the rod hit the neck of the femur, and a centimeter's distance beyond it. There was no evidence of any fracture. But Dr. Tuffier's confidence in the x-ray operator, and the apparatus was such that he proceeded to trephine the neck of the femur, and after going down one centimeter further he came directly on the end of the bullet, which lay lengthwise in the neck of the femur, and which would not, I think, have been discovered by any other method of localization.

The remarks which Dr. Churchman has just made touch upon many of the subjects brought up in the war that are of interest to all of us in the field of surgery, and I will not take your time to comment upon all of the interesting things he has said.

In the first place, from the time of the remarkable case of suture of the spinal cord which Dr. Harte reported, up to the present day, there have been various puzzles in regard to nerve injuries, both in the way of localization, and especially in the repair or lack of return of function. One of the very remarkable features, I think, of the nerve injuries of the war has been the partial interruption of function of a nerve without apparent gross anatomical lesion. Although the end results in the way of nerve suture are disappointing, nevertheless, there seems to be a good deal of satisfaction in the results of exploratory operations on nerves, for the reason that the mere freeing up of a nerve or the removal of constricting scar tissue, without any actual division of suture, has brought about a return of function very promptly and satisfactorily. In other words, there is a possibility of relieving many of these injuries by surgery, even though in the more serious, more complete lesions, the return of function by sur-

gical treatment is not so satisfactory. In any one of these partial injuries it is undoubtedly a question whether a very considerable improvement would not occur under any circumstances with the lapse of a considerable period of time. One must admit, however, that surgical interference has hastened the recovery anyway.

I shall attempt to discuss only certain parts of this interesting paper. The first Harvard Unit, under the leadership of Dr. Cushing and Dr. Greenough, met many of these nerve injuries, but the length of service was too short to draw satisfactory conclusions as to different methods of treatment.

Some recent German statistics are interesting in this connection. Stoffel, who has studied so carefully the anatomy of the nerve trunks, believes that attempts to free these injured nerves from adhesions and to repair defects should only be undertaken with a full knowledge of the anatomical structure of the nerve. He believes that the motor tracts should always be repaired first.

Stracker (*Wiener klin. Woch.*, 1916, No. 8, p. 225), working in Spitzky's hospital, reports 225 cases of nerve injury. His observations suggest, as do Dr. Churchman's, that we must change some of our ideas as to nerve distribution and as to return of power after actual resection. There were in his series 93 resections and 39 operations of neurolysis, and only 4 graftings. Of 25 resections of the radial nerve, 12 showed recovery of motility. Of 13 resections of the median, 4 recovered. Of 13 resections of the ulnar, 2 recovered. Of 12 resections of the sciatic, 2 recovered. Of 21 resections of the peroneal, only one recovered.

In regard to trench feet, I would say that when we first reached Paris, in April, we were impressed with the number of cases in the wards which showed disturbances of circulation in the feet. Dr. Cushing suggested a careful research into the symptomatology and causes, but as the warmer weather came the cases began to disappear and we saw very few cases. We did find, however, a very large number of cases of feet which had bad weight-bearing lines, and we considered this to have been probably an important predisposing cause in trench foot.

Dr. Churchman has raised the question of a possible infection as the cause of these symptoms. It seems to me this can be nearly ruled out by the clinical observations and experimental work of Smith, Ritchie, and Dawson. (*Jour. of Path. and Bact.*, October, 1915.) Their clinical material consisted of 51 cases and their experimental work was on rabbits. They conclude that exposure of feet poorly protected to cold and wet is the cause, and adds greatly to the discomfort in the many strained and pronated feet. They were able to reproduce in rabbits changes almost identical with those in men, and the essential change seemed to be damage to the blood vessels. An initial constriction gives way to dilatation, and swelling occurs. Microscop-

ically some of the muscle fibres of the walls are shown to be destroyed. There is an excessive amount of fluid poured out into the tissues, and the resulting stasis interferes with the vitality of the cells in the surrounding connective tissue. Eventual chronic inflammatory changes may ensue.

It may be of interest to show a few lantern slides illustrating apparatus used and medico-mechanical methods of treatment for the restoration of function after nerve injuries, and the predisposition to foot troubles which bad shoeing furnishes.

DISCUSSION BY DR. WILLIAM C. PETERS, BANGOR, MAINE:

On Monday of this week I dissected the musculo-spiral nerve. The case, a twelve weeks' old fracture, had wrist drop but no sensory disturbance. The wrist had been supported by plaster in the position of hyperextension. I found the nerve lying in a trough under tension but subjected to no pressure, and I was able to free it with a blunt dissector without using a chisel.

This case is interesting because it is one which is likely to occur in ordinary practice, and shows how slight tension or pressure is necessary to give paralysis.

DISCUSSION BY DR. A. C. HEFFENGER:

I wish to ask Dr. Churchman what experience he has had with bullets or foreign bodies remaining or lying in the brain, especially in the right lobe anteriorly.

DR. JOHN W. CHURCHMAN (closing):

The unfortunate part about the surgical treatment of nerve-injuries of this character is that the operation is very seldom done soon enough. This has been a factor in the French experience. The exigencies of this war have made it necessary for patients to travel from one hospital to another, sometimes in rapid succession, particularly if there is an active drive on, so that they do not reach a final hospital, where a nerve operation could be done, until some time after the lesion has occurred. Furthermore, the nerve injuries are often associated with badly infected bone injuries; in such cases operation is out of the question, and in the case I showed you, the operation could not be undertaken until nine months after the injury. I think it possible that the series that Dr. Osgood referred to in the German hospitals was probably at the front, at hospitals where they send special cases to special men who get their cases early. The fact that an interval did not intervene may account for the improved results. However, the feeling among the French neurologists is rather one of complete pessimism.

Dr. Greenough said that the crurisplax which he saw in Paris was not of a mild type but se-

vere. I think that that may be due to the fact that the cases he saw came from the Champagne Drive in the early part of the war. The cases I saw came entirely from Verdun. The transportation and sanitary service now is almost perfect; the wounds are extremely carefully handled, and it is possible that the more virulent cases of erysipelas are not being seen as often as at that time.

As regards the localization method, I did not go into the details of the technic. It is not a method of estimation; it is a method of great exactness. I recently localized a pin, a very small target, lying in the popliteal space, so accurately that we could stick a needle about four centimeters in, directly on the pin, and I do not think you could ask for a more exact method than that. The contrivance mentioned by Dr. Greenough is also being used in Blake's Clinic at Ris Orangis. By these two methods one can in almost every case localize a bullet exactly. The difficult cases happen in the very group that Dr. Greenough mentioned, where the bullet is near the bone.

As regards trench feet, the factors are dampness, cold and arterial lesion. Unfortunately there is a good deal of bad bacteriological work done at the front. Of course, almost all the cases are infected with multiple organisms, and, therefore, all sorts of organisms have been isolated. It seems to me the fact that mild cases occur with no lesions at all, indicates that the disease is not infectious.

As regards brain cases in the war: I have not much to say as to this. One of the striking things about the war is the extensive brain injuries which exist with no apparent harm. You have to see them to appreciate them. We had one man who had the whole front of his skull shot off for an area of four centimeters across the frontal lobe, had a bad infection in the dural space, but no symptoms. He recovered perfectly without anything being done. Many cases of bullets in the brain happened to be cases where the bullet was in the silent area. There being no symptoms, the cases were left alone.

JEJUNAL ULCER: A REPORT OF TWO CASES TREATED BY RESECTION AND END-TO-END ANASTOMOSIS OF THE JEJUNUM.*

By EDWARD P. RICHARDSON, M.D., F.A.C.S., BOSTON.

MANY of the dangers and bad functional results of gastro-jejunostomy have gradually been eliminated by improvement in technic. It becomes all the more important, therefore, to call to attention and to consider carefully the bad results that still occur. On this account I wish to report two cases of jejunal ulcer, one of

which I observed as assistant to the late Dr. M. H. Richardson, the second occurring in my own practice.

Before proceeding to a discussion of these two cases, it is well to consider briefly the pathology and clinical course of such ulcers from reported series of cases, since the question of treatment in such an unusual condition must be viewed in the light of general experience.

The first case was reported by Braun¹ in 1899. Since then numerous reported cases have been collected by various authors: Watts², Brodnitz³, Mayo Robson⁴, Tiegel⁵, Gosset⁶, Connell⁷, Paterson⁸, Schostak⁹, v. Roogen¹⁰, etc. In 1914, Schwarz¹¹ collected 146 cases, including 10 of his own; in 1915 Lieblein¹² analyzed 129 cases, exclusive of doubtful ones.

Paterson in 1909 divided the ulcers occurring in the neighborhood of a gastro-jejunostomy stoma into two classes, gastro-jejunal ulcers, which develop along the line of union between stomach and jejunum, and true jejunal ulcers which involve the jejunum alone. He says that while jejunal ulcer is a result of altered physiological processes produced by operation, gastro-jejunal ulcers are probably a direct result of the operation itself. This dictum has been borne out by subsequent clinical and experimental evidence. The difference is more than one anatomical situation and etiology. The clinical course and amenability to treatment also justify a division. The principal factor in the occurrence of gastro-jejunal ulcers is the use of non-absorbable suture material. Thus Carman¹³ and Balfour found strands of unabsorbed permanent suture material in 6 of 13 cases. Wilkie¹⁴ produced gastro-jejunal ulcer experimentally in cats, and concluded that the presence of unabsorbable sutures in the granulating area tends to delay repair, and that chronic jejunal ulcer, as found in the human subject, is probably due to the failure of the gastro-enterostomy wound to heal completely. Soresi¹⁵, in dogs, found the permanent suture still hanging in the stoma in all but one of 47 instances at periods of from one to ten months. Three cases showed ulceration of the mucosa of the stomach or jejunum. In jejunal ulcer we have not such an obvious cause for ulceration.

Lieblein, in the 129 certain cases collected by him, finds 50 gastro-jejunal ulcers, and 79 true jejunal ulcers, the latter in 9 instances combined with gastro-jejunal ulcers. His analysis of the 79 cases of jejunal ulcer gives the following facts—86.6% of the cases were between 21 and 50. The youngest was 2 months and the oldest 70 years of age; 89.5% of the cases were in men. Of 74 cases, only 26 followed retro-colic posterior gastroenterostomy; 36 cases followed anterior gastroenterostomy, in 13 instances combined with entero-anastomosis; 9 cases followed the Roux Y operation. The predominance of anterior gastroenterostomy is all the more striking since the great majority of operations in recent years have been pos-

* Read at the Inaugural Meeting of the New England Surgical Society, Boston, October 5, 1916.

terior. Almost without exception the cases had been operated on for benign disease. The interval before development of symptoms was under two years in 75%, the extremes being 2 days and 10 years.

Pathologically these ulcers resemble closely chronic ulcers of the stomach and duodenum. They occur (with a few exceptions) close to the opening, either on the efferent loop, opposite the stoma, or more rarely on the afferent loop. Multiple ulceration may be present.

Lieblein groups his cases of true jejunal ulcer as follows: Perforation into the free abdominal cavity, 24 cases; formation of an inflammatory tumor, 30 cases; chronic adhesive peritonitis without tumor formation, 9 cases; fistula into the colon, 13 cases. All the cases of the latter followed posterior gastroenterostomy.

Schwarz groups his 146 cases as follows: Perforation, general peritonitis, 25 cases. No definite perforation, subphrenic abscess or peritonitis, 4 cases; ulcers involving the abdominal wall, 51 cases; ulcers penetrating into the mesentery, 5; ulcers penetrating into the liver, 1; ulcers penetrating into the chest-wall, 2; ulcers penetrating into the colon, 19; ulcers on the stoma with resulting conditions, 39. In the last group he includes cases with stenosis or obliteration of the stoma, which he considers the result of a peptic inflammatory process.

These figures give an idea of the tendency of such ulcers to deep penetration and serious complications. Acute perforation resembles that of a duodenal or gastric ulcer, and may occur without previous symptoms. It appears even more fatal. Cases with extensive adhesions, inflammatory tumors, colonic fistulae, naturally present difficult surgical problems.

The result of treatment has been what one would expect under these conditions. Of 24 cases of acute perforation, only 9 were reported operated on; of these 6 recovered (Lieblein). Of 30 cases with inflammatory tumor present, 2 died from operation; 10 of the remaining cases required further operation. Six were operated on twice, with persistence of symptoms in certain cases, and 4 cases were operated on 4 times. Of the 9 cases without an inflammatory tumor, 4 died following operation. In one case the symptoms still persisted. Of the 13 cases with colonic fistulae, 3 died without operation; 2 cases died after operation, 3 cases had recurrence of symptoms and only 2 cases were reported sufficiently long after operation to be apparently cured. In general the operative mortality in the cases of jejunal ulcer following posterior gastroenterostomy is greater than in those following anterior.

Gastro-jejunal ulcers have apparently a less tendency to perforation, either into the peritoneal cavity or the colon, and a greater tendency to produce stenosis of the stoma. These cases also showed a marked tendency to recur after operation.

The two present cases are examples respec-

tively of jejunal ulcer, and jejunal and gastro-jejunal ulcer coexistent.

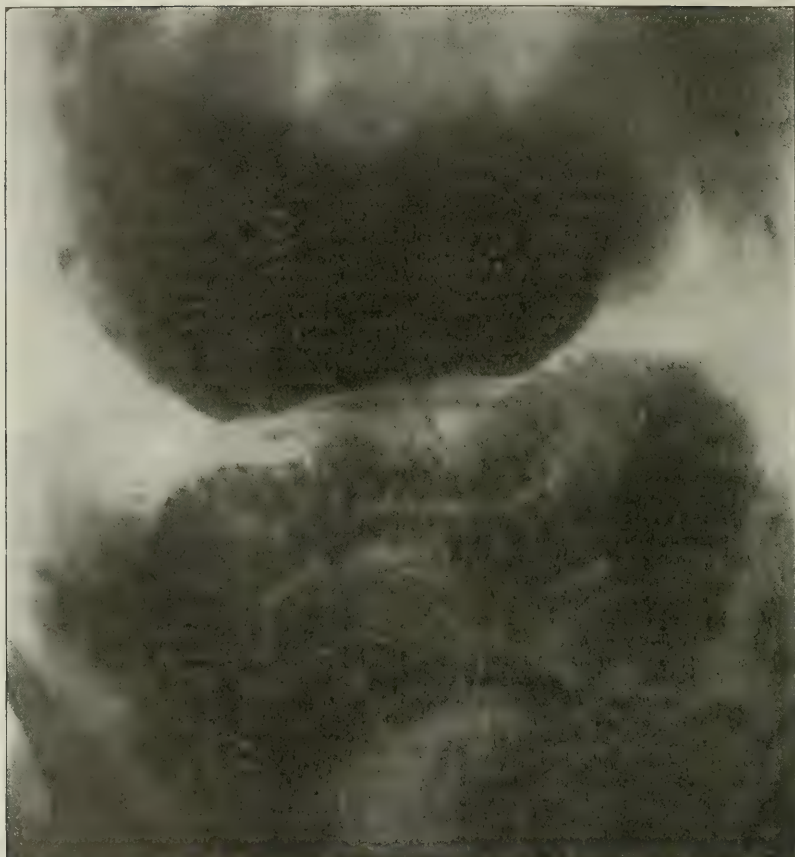
CASE 1. L. R., male, 46, m., grocer. Patient of Dr. M. H. Richardson, July 28, 1908. For two years has had almost daily pain in the epigastrium, coming on without definite relation to meals. At times the pain wakes him at night, and is severe enough to double him up. It lasts usually from 15" to 30". Has vomited only once. Blood never seen in the stools; never jaundiced; appetite good; could eat anything if he did not feel afraid to do so. Well until 3 yrs. ago. No definite illness in past except as above. Weight 3 yrs. ago 220 lbs., now 178 lbs. F. H. negative. Examination shows a small epigastric hernia, and a palpable mass in the epigastrium. The fasting stomach was empty. A test meal showed a somewhat delayed motility; free HCl present; no lactic acid; guaiac test negative.

Operation. Aug. 20, 1908, by Dr. M. H. Richardson: Median epigastric incision. Examination showed the stomach rather larger than normal. On the anterior surface of the pylorus and the beginning of the duodenum was an indurated area corresponding to a slight puckering and discoloration on the surface. Extent of induration about 1 by 1-1/2 inches. Gall-bladder slightly adherent to duodenum, markedly fixed to the region of induration. No enlarged glands felt. Posterior gastro-jejunostomy, iso-peristaltic, made with two continuous rows of silk sutures, at a point as near as possible to the origin of the jejunum. Operation done without clamps.

March 10, 1910, patient reported that he had been well until the previous fall. Since then he had had irregular abdominal pain, becoming severe for two months. The pain goes to the back. Now he suffers terribly. There has been no vomiting. No blood noticed in stools. Wt. 188. Examination of abdomen negative.

Operation. April 12, 1910, by Dr. M. H. Richardson. The ulcer of the duodenum was apparently healed, but still distinctly visible as a scar. The gall-bladder was adherent to the duodenum. No gall-stones. At the site of the old gastro-enterostomy, there was a marked induration, especially of the jejunum at the point of union and of the mesentery of the jejunum. The stoma was still open and about 1 inch in diameter, and was readily palpable on account of the induration around it. Adhesions separated and jejunum dissected from stomach at the line of union. Opening in the stomach closed. Directly opposite the stoma, at the apex of a fold of the jejunal loop, was a deep punched-out ulceration 3-4 inch in diameter, apparently extending through all coats into the mesentery. About two inches of the jejunum resected and an end-to-end anastomosis done with silk. Cigarette wick to joint. Dr. W. F. Whitney's microscopic diagnosis was "Simple ulceration."

The patient made a good recovery after operation, and for some months was completely relieved. Then there developed a recurrence of symptoms similar to those in the first place—irregular, severe pain with occasional vomiting. Under medical treatment by Dr. F. W. Palfrey, these symptoms improved for a year, and then recurred. When last seen by him on Oct. 9, 1911, he was still suffering severely at times. The symptoms were thought to be due to a recrudescence of the duodenal ulcer.



CASE I. X-ray by Dr. L. B. Morrison, Oct. 23, 1916, two hours after bismuth meal. Pyloric obstruction, no duodenal stasis. No evidence of jejunal obstruction at point of anastomosis.

October 4, 1916, he is reported in fair health, is able to work, but suffers occasionally from his stomach. He has had no further operation.

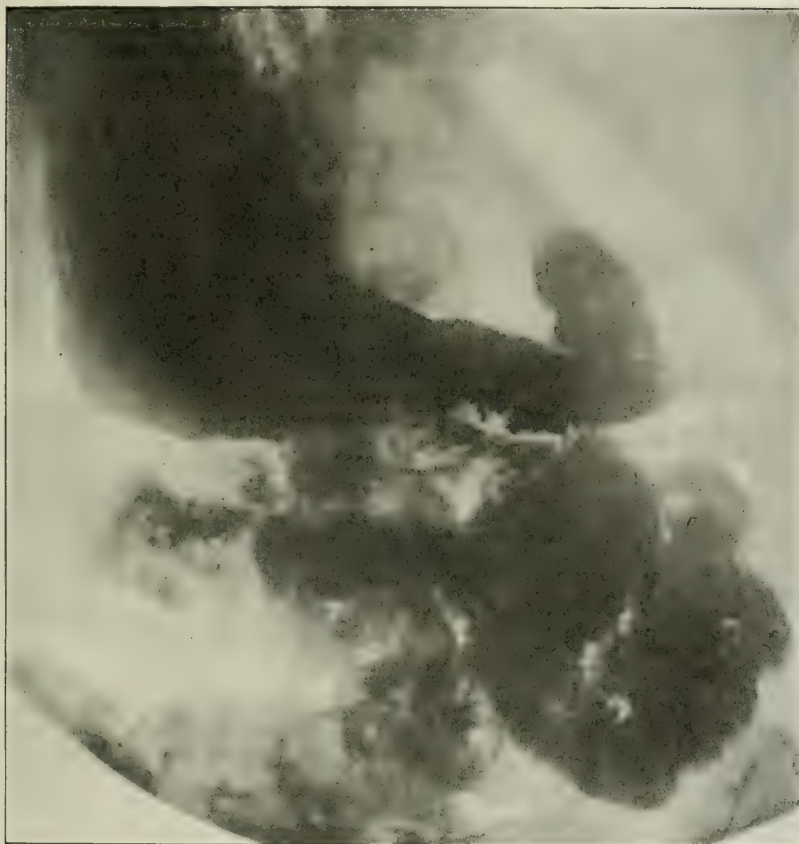
[Note. On Oct. 12, 1916, the patient was finally seen. He states that he has improved considerably since last seen. He has been able to do light work without interruption. Almost daily he has a distressed feeling in the epigastrium, coming on irregularly, occasionally at night, lasting about half an hour. This is relieved by bicarbonate of soda. It is not severe enough to prevent his working. He eats ordinary food freely—the kind of food seems to make no difference in regard to the pain. There has been no vomiting, and no blood noticed in stools.

Examination shows him to be apparently in good condition. Examination of chest and abdomen negative. No hernia in scar. A large left inguinal hernia present. Wt. 161.

An x-ray study was made by Dr. L. B. Morrison on Oct. 23, 1916. His report follows: "Fluoroscopic

observations show a large atonic stomach of horizontal type with definite obstructive peristalsis, the waves cutting in deep and rolling well over the antrum. The duodenum was in behind—was unable to get a good view on the plates or fluoroscope in any position, although the bismuth seemed to be escaping in small quantities. There was no evidence of any obstruction in the jejunum, as the plates taken two hours after the meal show normal passage, the bismuth having reached the ileum. Conclusions: Obstructive peristalsis, the absence of the duodenal filling; the dilated stomach suggests a duodenal ulcer. There was no evidence of jejunal obstruction. I could find no evidence of where the anastomosis was made." (See Fig. 1.)

The case, therefore, at the present time would seem a suitable one for further operation, preferably a Finney pyloroplasty. However, after his past experience, with his present comparative comfort, he is not inclined to accept further surgery.]



CASE II. X-ray by Dr. A. W. George, Sept. 23, 1916, shortly after bismuth meal. Slight deformity of duodenum, no duodenal stasis. No obstruction at point of jejunal anastomosis.

CASE 2. I. E. C., male, 28, m. Patient of Dr. W. O. Hewitt, Attleboro, Mass. For a year and a half patient has had pain in the epigastrium, coming on without definite relation to meals, chiefly while at work. He has the pain almost daily, although there are occasional remissions. Sometimes the pain makes him walk the floor at night. The pain is somewhat relieved by soda, and occasionally by eating, although the pain would recur an hour later. Has never vomited. No blood noticed in stools. Present weight 160; has lost 24 lbs. Examination was negative except for slight tenderness in epigastrium. X-ray showed no definite evidence of duodenal ulcer, but was somewhat suggestive of gall-stones.

Operation at Sturdy Hospital, Attleboro, Nov. 14, 1914. Epigastric incision through right rectus. The gall-bladder was negative. The duodenum showed induration of the anterior wall of its first part, due to ulcer. The stomach was normal in size. The appendix could be felt in the right iliac

fossa, but was bound down by adhesions and could not be delivered. A posterior iso-peristaltic gastro-jejunostomy was done, the loop of the jejunum being as short as could be brought to the abdominal wall. Two layers of continuous silk were used, an exceptional instance in this case.

The patient made a good recovery, and was relieved of his symptoms for 9 mos. Then the pain came on again about two hours after eating. It would last until he took the next meal. Sometimes he could not eat on account of the pain. Sometimes the pain would last all night so that he could not sleep. The pain increased in severity, so that he had to give up work. The pain was constant like a dagger. No vomiting. No blood from bowels. Wt. 143 lbs.

Examination showed a definite acute sharply localized point of tenderness, 2 inches above, 1 inch to the left of the navel. Here there was a sense of resistance suggesting an indefinite mass.

X-ray examination by Dr. A. W. George gave the following findings:

"Plates made of the gall-bladder region. These show no evidence of gall-stones.

Following the bismuth meal, examination was made of the stomach, both by the plate method and by fluoroscope.

The x-ray shows the stomach to be emptying through the gastroenterostomy opening.

There is no evidence of any bismuth passing through the pylorus, and the first portion of the duodenum is not visualized. The stomach itself is of normal outline and position; there is no evidence of an ulcer. The emptying time of the stomach is extremely short; nearly half of the bismuth meal being in the small intestine at the end of 15 minutes. This rapid emptying is a condition which frequently occurs with gastroenterostomy, and which itself may cause a variety of symptoms. The examination in 6 hours after the meal shows the bulk of the bismuth to be in the lower end of the ilium. This is significant as we would expect the bismuth to be further along on account of the rapid emptying of the stomach. I believe that this is a definite ileal stasis. The caecum is high in position and more or less distorted in outline and contains gas with the bismuth. This ileal stasis, together with the abnormal condition of the caecum, suggests the possibility of post-operative adhesions involving the right lower quadrant."

Operation. Feb. 15th, 1916. Median epigastric incision. At the site of the old ulceration of the duodenum, nothing could be seen or felt. The calibre of the pylorus appeared normal. There was no thickening of the muscle. Gall-bladder negative. The whole gastroenterostomy felt thickened and indurated. There was definite induration of the transverse mesocolon on the right edge of the stoma. The jejunum proximal to the stoma was adherent to the mesocolon. There was another point of induration in the mesentery of the jejunum opposite the stoma. The intestine was separated from the stomach along the line of union, and showed the following condition. There was an ulcer 1-8 in. by 3-8 in., just to the jejunal side of the line of union, on the right anterior aspect of the stoma. From the point of this ulceration, a prominent fold crossed the jejunum opposite the stoma. On the edge of the fold, on the mesenteric border of the jejunum just opposite the stoma, was an ulcer 1-8 in. in diameter, extending into the muscular coats, with much induration of the mesentery. The opening in the stomach was closed, and about 11-2 inches of jejunum resected, with end-to-end anastomosis. Wound closed without drainage.

The patient vomited large amounts for three days; after this convalescence was good. He reported on Sept. 13th, 1916. He went to work on May 1st, and has been working steadily ever since. He has had absolutely no trouble with digestion. No pain whatever. His weight is 158 lbs. Examination of the abdomen was negative.

X-ray, Oct. 5, 1916, by Dr. A. W. George: "Examination made of stomach by the bismuth method shows a stomach that is moderate in size, shape, and position with no marked evidence of deformity. Plates of the duodenum show a narrowing of the mid portion of the first portion of the duodenum. This suggests the possibility of ulcer, although not one with a large scar tissue. The duodenum empties and the bismuth passes readily into the

second and third portions and into the jejunum. There is nothing to suggest operation and no evidence of deformity or obstruction. See Figure 2.

Technically these two operations were very similar. In both there was considerable difficulty, on account of the numerous adhesions, and from the fact that the proximal end of the jejunum was too short to bring to the surface of the wound. In both instances a double layer of silk had been used; in neither case could silk be seen exposed at the operation. In the first case there was no evidence that the silk was connected with the ulceration. In the second, silk fibres could be seen on section at the base of the gastro-jejunal ulcer, and in all probability acted as an exciting cause. The jejunal ulcer also present might have been secondary in the following way. The inflammatory reaction caused by the gastro-jejunal ulcer might have produced the fold on which the jejunal ulcer was situated. This fold might be a vulnerable spot, from exposure due to its prominence, and possibly from inflammatory infiltration interfering locally with its circulation. If at a later date the gastro-jejunal ulcer should have healed, and the jejunal persisted, or if the gastro-jejunal ulcer had been overlooked, this connection could not be suspected, yet primarily the unabsorbable suture might have been responsible for the jejunal ulcer.

The etiology of jejunal ulcers is still uncertain. The work of Rosenow¹⁶ on gastric and duodenal ulcers may also have a bearing in these cases. The gastric acidity has been considered a principal cause. The situation of the ulcers, at a point exposed to the gastric discharge, would suggest the importance of the action of the gastric juice. However, hyperacidity is not always present; in fact the acidity may be normal or subnormal. Hyperacidity was found in 13 out of 18 cases (Paterson). He believes that jejunal ulcers are due to a toxic agent, which injures the jejunal mucosa so that it is digested. This toxic substance is usually free hydrochloric acid. He suggests the following condition under which the toxic action of hydrochloric acid may occur—(1) hyperacidity; (2) normal acidity, but hypersecretion; (3) normal acidity, but diminished flow or diversion of bile and pancreatic juice, and consequent diminished neutralization of the acid. The importance of the neutralization is shown by the frequency of ulceration following the Roux operation and gastroenterostomy with entero-anastomosis, which divert the biliary and pancreatic fluid from the region of the stoma. For the cases with normal or subnormal acidity, with normal neutralization, he suggests some other toxic agent in the gastric juice.

A further factor may be delay in passing along the gastric discharge, either from kinking, or from spasm, as observed by Kocher¹⁷, thus giving the gastric juice a longer time to act in the region of the stoma.

Interference with circulation may be a factor, although experimentally it is difficult to pro-

duce ulceration in this way. However, interference with the circulation may lessen the amount of anti-peptic ferment brought to the mucosa, and so favor ulceration.

The importance of infection is more clear in gastro-jejunal than in jejunal ulcers. A few cases of jejunal ulcers, usually multiple, occurring shortly after gastroenterostomy, have been considered infectious in origin. The late development of most cases of jejunal ulcer seems to exclude operative trauma as a factor.

Unfortunately in the present cases, the gastric acidity was not observed. I should like to mention, as a possible etiological factor, a contributing cause outside the stomach, such as disease of the appendix or gall-bladder. Such a condition may produce a hyperacidity in stomachs otherwise normal, and might conceivably favor an increased gastric acidity even after a gastroenterostomy. A diseased appendix or gall-bladder might itself be more directly of some etiological importance through its existence as a septic focus. In this connection, I would simply note that Case 2 showed evidence of appendicitis, with adhesions, both at operation and by x-ray.

In the matter of symptoms I wish to emphasize one point,—the occurrence of persistent, irregular pain in a gastro-jejunosomy which otherwise may be functioning well. Local tenderness over the region of the stoma, when present, is an important confirmatory sign. Obstructive symptoms, inflammatory tumor, bleeding or fistula formation may occur, but these should be evidence of deep penetration and operative difficulties rather than essentials for diagnosis.

The x-ray may give confirmatory evidence. In cases with colonic fistulae or deep pockets, this is obvious. Carman¹⁸, who studied 13 cases of gastrojejunal ulcer, found signs which he divided into two classes, first those denoting an abnormal condition, and second, those pointing to the pathological focus. In the first group he mentions six-hour retention, hyperperistalsis, large size of stomach, dilatation of the duodenum, spasticity of the stomach. In the second, he notes deformity about the stoma, narrowing of the jejunum, scant flow of barium through the gastroenterostomy opening, and fixation of the stomach at the point of anastomosis.

In regard to treatment, two lines of argument are possible. First, surgical treatment is difficult and dangerous, recurrence is probable, therefore we should persist in palliative methods, and only operate when thorough attempts to cure have failed. On the other hand, the characteristic of these ulcers is deep penetration. If we delay, it may mean only the presence of a greater inflammatory mass, the extension of ulceration into neighboring structures with the need for more extensive and difficult resections. The actual form of surgical treatment must depend on the case. The results of palliative operative measures, chiefly jejunos-

tomy or an additional gastro-jejunosomy have been bad, since the progression of the ulceration is not necessarily stopped. The indications call for excision or resection of the ulcer, with restoration of continuity in the manner most feasible. The situation of gastro-jejunal ulcers lends them more readily to excision and a plastic on the stoma. Such ulcers should be inspected by opening the stomach or jejunum. It is possible that in certain cases the removal of an unabsorbable suture alone, as in the case of Soresi, may result in cure.

If the ulcer is obviously jejunal, resection seems the best treatment. In the present cases, the pylorus was fortunately approximately normal, and restoration to the usual arrangement made it at last possible to start again *de novo*, should the duodenal ulceration recur. The Roux operation was possible, but is itself peculiarly liable to ulceration. Should stricture or ulceration near the pylorus persist, resection, closure of the hole in the stomach, and gastro-duodenostomy would seem the ideal operation. In certain cases a jejunostomy at the time of resection might enable this to be done in two stages. In the case of absence of the pylorus, or extensive ulceration near it, it would be a matter of restoring the continuity in the most suitable way under the conditions.

Would a superficial jejunal ulcer heal if the gastroenterostomy was separated, and both openings closed, so that the ulcer was no longer directly irritated by the gastric discharge? The rare occurrence of spontaneous jejunal ulceration, as reported by Bryan¹⁹ and others, would apparently make this, if possible, an unjustifiable risk.

The question of jejunal and gastrojejunal ulcers is one of prevention rather than cure. The posterior short loop operation fulfils the condition demanded to avoid such ulcerations—the stoma at a high point in the jejunum, with consequent greater tolerance to acidity; access of bile and pancreatic fluids to neutralize the gastric juice; absence of tension on the jejunal mesentery. It should be carried out with catgut for the inner layer, and a continuous sero-serous suture of silk may well be avoided. Diet should be given with a view to the probable state of the stoma, which may heal by granulation, and to diminishing gastric acidity rather than to the appetite and powers of assimilation of the patient.

Conclusion: Jejunal ulcer may occur after posterior short-loop gastroenterostomy.

Persistent pain, following gastro-jejunosomy, especially if accompanied by local tenderness over the stoma, should suggest jejunal or gastro-jejunal ulcer.

Such ulcers are characterized by a tendency to deep penetration.

Surgical treatment undertaken early is likely to be less dangerous and more effective.

REFERENCES

- ¹ Braun: Die Verhand. der Deut. Gesell. für Chir., 1899, p. 94.
- ² Watts: Johns Hopkins Hospital Bulletin, 1903, xiv, p. 191.
- ³ Broditz: Die Verhand. der Deut. Gesell. für Chir., 1903, p. 119.
- ⁴ Mayo Robson: Annals of Surgery, 1904, xl, p. 186.
- ⁵ Tsigel: Mittell. a. d. Grenzgeb. d. Med. u. Chir., 1904, Bd. xlii, p. 297.
- ⁶ Gosset: Revue de Chirurgie, 1906, xxxiii, p. 54.
- ⁷ Connell: Surg., Gynec. and Obstet., 1908, vi, p. 39.
- ⁸ Paterson: Annals of Surgery, 1909, l, p. 357.
- ⁹ Schostak: Beiträge z. klin. Chir., 1907-1908, Bd. lvi, p. 360.
- ¹⁰ Van Roogen: Arch. für klin. Chir., 1909-1910, xcl, p. 381.
- ¹¹ Schwarz: Archiv. für klin. Chir., 1914, 104, p. 694.
- ¹² Liebelin: Centralblatt für die Grenzgeb. der. Med. u. Chir., 1915, xix, p. 64.
- ¹³ Carman and Baltour: Jour. Amer. Med. Assn., 1915, 65, p. 227.
- ¹⁴ Wilkie: Edinburgh Med. Jour., 1910, v, p. 316.
- ¹⁵ Sorel: Annals of Surgery, 1915, lxi, p. 328.
- ¹⁶ Rosenow: Jour. A. M. A., 1914, lxxii, p. 902.
- ¹⁷ Kocher: Die Verhand. der Deut. Gesell. für Chir., 1902, Bd. xxxi, p. 203.
- ¹⁸ Carman: Amer. Jour. of Roent., 2, p. 749.
- ¹⁹ Bryan: Surg., Gynec. and Obstet., 1916, xxiii, p. 279.

DISCUSSION.

DISCUSSION BY DR. C. L. SCUDDER.

I think that the society is to be congratulated that this subject of gastro-jejunal ulcer has been presented for discussion by Dr. Richardson. The operation of gastroenterostomy is a common operation. It is important, therefore, to consider any of the sequelae of gastroenterostomy.

There are three things that occur to me in connection with this subject that seem to me important: First, that considering the large number of gastroenterostomies done, the incidence of gastro-jejunal ulcer is not great. If we judge by the reports in literature they amount to less than two per cent. We cannot, of course, be sure of the accuracy of that figure, because probably many cases are unreported, and unless the gastro-jejunal ulcer has been demonstrated by operation the reports of probable ulcers are untrustworthy.

It is important to distinguish between a jejunal ulcer and a gastro-jejunal ulcer. A jejunal ulcer is very uncommon in man. It is not uncommon following experimental work upon the gastro-intestinal tract of cats and dogs, where so much experimental work is done. Gastro-jejunal ulcer is an ulcer, as Dr. Richardson has pointed out, occurring in the line of the anastomosis between the stomach and jejunum at the stoma. It is at this situation where we find these post-operative ulcers in man. A gastro-jejunal ulcer may result in a perforation as an ulcer seated elsewhere. It may, therefore, cause dense perigastric adhesions. The symptoms arising from gastro-jejunal ulcer resemble very closely the symptoms of the original ulcer for which the gastroenterostomy was done. It is important, therefore, to suppose that the incidence of gastro-jejunal ulcer is probably a little greater than is determined by the reported cases in literature.

Second, a word regarding the etiology of gastro-jejunal ulcer. During the last three years I have seen three cases of gastro-jejunal ulcer. In one case it was suspected, and the patient

would not consent to operation, being fairly comfortable on a careful diet, but the symptoms were similar to those of the chronic ulcer for which the gastroenterostomy was performed. This is not a proved case of gastro-jejunal ulcer.

The remaining two cases are similar to those reported by Dr. Richardson, and were operated upon and are doing well today. In each of these operated cases I was able to demonstrate in the base of the gastro-jejunal ulcer foreign suture material which was rather firmly attached to the edge of the ulcer. In the performance of the gastroenterostomy an unabsorbable linen suture had been used, and it was found at operation. I believe that the evidence from other clinics, and the evidence here adduced, make it very plain that an absorbable suture like chromic catgut should be employed in the inner layers of the gastroenterostomy, and that if linen is to be used it should be used only in the outer layers and then with interrupted sutures.

Third, how may we prevent a gastro-jejunal ulcer from forming. I believe, although the operation of gastroenterostomy is a comparatively frequent one, that attention to the details of technic in performing the operation is of very great importance. I do not believe that this operation should be delegated to assistants and house surgeons in hospitals, because the details of its performance must be carried out as they can only be carried out by experienced operators. These technical details cannot be elaborated here, but certain of them may be enumerated. The stomach and jejunum should be handled gently. The place chosen for the anastomosis should be accurately selected both in the stomach and in the jejunum. The opening in the gastrocolic omentum should be suitable in size and position. There should be absolutely no oozing or hemorrhage during the operation. Suitable clamps should be employed both to the stomach and intestine. These clamps should be applied with just sufficient pressure and not roughly with undue pressure. Absolute cleanliness should be observed. The sutures should be placed accurately and not made to constrict. Tissue forceps should not be used during the operation. Absorbable sutures should be used upon the inner layers and interrupted sutures of linen upon the outer layers. Very careful suture of the edges of the gastrocolic opening to the stomach should be made. The gastrocolic opening should be closed posteriorly to the stoma. Three stay sutures of interrupted linen should be placed on either side of the sutured stoma. At the completion of the operation the parts operated upon should be replaced in their normal position to the left of the spine. I believe that if these details are followed with care very few gastro-jejunal ulcers will result.

Again let me congratulate the society upon having had this subject presented so admirably by Dr. Richardson.

Regarding the x-ray examination of gastrointestinal lesions. I believe that the x-ray study of the stoma following gastroenterostomy is of the greatest assistance to a knowledge of the physical conditions of the stoma. Such a study will show the behavior of the stoma upon the emptying of the stomach. It will show any slight induration in the circumference of the stoma.

Dr. Carman's paper upon the findings of the x-ray in jejunal ulcer is a very valuable communication in connection with this subject. It is possible for the x-ray operator to detect tenderness in the stoma associated with a gastro-jejunal ulcer. The surgeon is often unable to locate tenderness.

Dr. George Holmes of the Massachusetts General Hospital and I are studying a series of post-operative gastroenterostomy cases to determine the behavior of the stoma. This study will assist in establishing a standard of normal behavior in this important group of cases.

DISCUSSION BY DR. F. B. LUND.

In some years' experience in stomach surgery, I have never had a case of true jejunal ulcer, nor yet of gastro-jejunal ulcer. I have, however, had several gastroenterostomy openings contract, and with return of symptoms, sometimes requiring secondary operation. There was granulation tissue along the line of suture, but no true ulcer with exposed base. I do not think these contractions took place because the pylorus was open, for many have stayed wide open in spite of that fact, and some have contracted even when the pylorus was also contracted, so that the stomach could not be completely emptied either way. Most of these contractions took place at a time when I was temporarily using linen thread for both layers. This is a mistake. Linen should never be used for the inner layer, where it hangs as a septic shred and source of infection, and by its presence keeps up the irritation, resulting in hyperemia, inflammation, edema, formation of granulation and then scar tissue, finally scar contraction and closure of the outlet. If linen is used for the outer layer, it should be very fine and smooth linen, and not the rough, coarse sizes.

There is much to be said for the use of chromic gut in three layers for the anastomosis.

The tendency to contraction of the opening is increased if it is made too small in the first place. This is sometimes done because of the difficulty in fat patients, adherent cases, and deep-chested patients, of getting the stomach far enough outside to do the posterior gastroenterostomy easily and make an adequate opening. If this cannot be done, an anterior gastroenterostomy should be made, for an adequate anterior operation is to be preferred to a posterior operation with a too-small opening. Anterior gastroenterostomy should always be accompanied by an entero-enterostomy, as the loop is unnecessarily long.

The posterior no-loop gastro-enterostomy, although a great improvement, does not always, in all hands, prevent the vicious circle—as I learned in two cities where the surgeons confessed to having a few cases, namely: St. Louis and New Orleans. I have had one case of my own, which was treated by an entero-enterostomy with a Murphy button, which was rendered rather difficult by the shortness of the loop. The result was excellent.

Bartlett's ingenious suggestion of introducing the halves of the button into the limbs of the bowel through an incision in the stomach and through the stoma should be borne in mind, and may make an otherwise difficult procedure easy.

In cases of contraction of both stoma and pylorus, I have gotten excellent results in several cases by disregarding the contracted anastomosis, and simply doing a Finney on the pylorus. These were in weak, exhausted patients. If the patient is in good condition, the Finney may be accompanied by separation and closure of the openings in the stomach and intestine.

Multiple operations on the stomach are, however, to be avoided, if possible, by taking adequate measures at the primary operation, because the adhesions in multiple procedures tend to cripple the parts, especially the upper jejunal loop, so that free, healthy actions are impossible, and continued anorexia and vomiting render the patient miserable and thin.

I would call attention to the necessity of closing the interval between the short loop of jejunum and the mesogastrium, to which Moscovitz has recently called attention, after having had a case of hernia of the small intestine through this opening with obstruction of the bowels. I have had one such case myself, which required an emergency operation.

The true jejunal ulcer is so rare that it does not present much of an argument against gastro-jejunosomy. The frequency of perforations, however, makes it a serious complication. I thoroughly approve of resection and end-to-end anastomosis as suggested by Dr. Richardson, for the treatment of these cases. I have had to resect the upper jejunum close to the duodenum twice for cancer. There was no room for the overlapping required by a side-to-side anastomosis, and the large round bowel made end-to-end work easy. Besides it was the only way practicable.

In regard to the causation: Contact of the acid gastric juice with the mucous membrane, which had been used to having it mixed with bile, and the contraction of the circular fibres retaining the acid secretion, have been alleged as the cause. It appears to be more frequent after the anterior operation. We have no evidence that pyloric exclusion would prevent it. The Finney plastic would probably not be followed by it, but that, as we know, is in some cases difficult, and in some cases inadvisable, on

account of the activity of the ulcer at the pylorus.

As Dr. Scudder has said, the more important treatment is preventive, and consists in making a sufficiently large operation and careful technique.

It is fortunate that the rarity of these conditions does not make it necessary to give them a great deal of consideration. When they do occur, however, we must be prepared to recognize and deal with them.

DISCUSSION BY DR. ERNEST A. CODMAN.

I think, as the other speakers have, that it is timely to bring up the discussion of jejunal ulcer, and in the main I agree with what has been said. In regard to frequency I am inclined to think that jejunal ulcer is common rather than rare after gastroenterostomy. Even in these days I still think that duodenal ulcer itself is more common than we realize. The first symptom of duodenal ulcer is sometimes perforation, sometimes indigestion and sometimes hemorrhage. Sometimes it is not characterized by any of these symptoms; it is symptomless. Sometimes one, sometimes two and sometimes all symptoms are absent. If one symptom can be absent, all can. The same I believe to be true of jejunal ulcers. Sometimes they are characterized by contraction, sometimes by perforation, but I believe that in many cases they do not cause any symptoms at all. One reason for believing this is, that in doing some experiments on dogs where I was making gastroenterostomies, I opened the animals at intervals of a month or so afterwards, and in nearly every case I found a shred of suture hanging perhaps an inch or two into the bowel, and granulation tissue about the suture line. Now Dr. Lund has defined that kind of a case as not a jejunal ulcer, but I am sure that most reported cases of jejunal ulcer are due to this cause and not to chemical action.

I have operated on two patients, in both of whom I found the little thread of suture hanging down in the intestine. I saw Dr. W. J. Mayo operate on one in which a suture was hanging down in the intestine. Now in all these cases the gastroenterostomy opening was contracted as well as ulcerated; it followed the rule of scar tissue when ulcerated and tended to contract. A contracted gastroenterostomy opening is almost synonymous with ulcer of the suture line.

In regard to treatment: In one of my cases, two previous gastroenterostomies had been done and the patient was in very bad shape. I did an anterior gastroenterostomy and the patient died. In the other I excised the old opening and made a new one and the patient recovered.

I know of a case who recovered under an original treatment of Dr. Mixer's. He introduced an elastic ligature through the old contracted opening and brought it out again

through the jejunum and stomach and then tied it, making a very easy enlargement of the gastroenterostomy opening.

Dr. Lund spoke of Bartlett's operation.

I had occasion to do that in another case, and was successful, although technically the operation was more difficult than it sounds when described.

DISCUSSION BY DR. JOHN W. CHURCHMAN, NEW HAVEN, CONN.

I am extremely sorry that Dr. Flint is not here, for this is a subject that he is interested in so far as the etiology is concerned. I hesitate to quote him, because I am not perfectly familiar with the details of his experiments. But I may say that his conclusions are very definite, and that he has material from experiments on dogs, showing not only that non-absorbable sutures are the cause of these ulcers, but that the non-absorbable material is in many cases isolated by a down-growth of epithelium about the suture which forms a little epithelial cyst that leads to ulcer. As I said, he has sections showing all the stages.

I should like to ask one question. The reader spoke of the x-ray as of value in the diagnosis of these cases. Of course, when these cases occur nothing could be more distressing, and we are anxious to find out positively whether an ulcer is present. Does the x-ray show the crater in the bismuth meal?

DISCUSSION BY DR. JOHN T. BOTTOMLEY.

Two things come to my mind that have not been mentioned: First, all ulcers have a cause, an ulcer representing only an advanced stage of some preceding process. Unless we take measures to exclude the cause or to prevent its action, there is no reason why it may not continue to act even after operation, and cause further damage. In cases of gastric or duodenal ulcer, for instance, the condition of the tonsils and the teeth should be carefully looked into and any disease there eradicated; moreover, during the operation for such ulcers the condition of the appendix and pelvic organs should always be ascertained and any source of infection removed.

I have seen two or three cases of gastro-jejunal ulcer following gastroenterostomy. In each I found a long piece of linen thread in the neighborhood of the ulcer and in each instance I was able to excise the ulcer. Dr. Crile believes that if one uses linen for the sero-serous suture, one should carefully see to it that the bite of the needle does not include the mucous layer of the stomach; in his opinion attention to this point may prevent a certain proportion of gastro-jejunal ulcers following gastroenterostomy.

I believe, too, that most of our cases have too little supervision following operation. We know that gastro-jejunal ulcers never follow a gastro-

enterostomy for cancer, and are aware, too, that in gastric and duodenal ulcers the acidity of the stomach secretion is usually increased. I feel, then, that a careful regulation of diet for patients in their convalescence—even their late convalescence—after gastroenterostomy and the inhibition of alkalis over a considerable time after operation would do much to do away with some of unpleasant post-operative occurrences.

DISCUSSION.

DR. E. P. RICHARDSON (closing): It seems to me that the distinction between jejunal and gastro-jejunal ulcers is one that deserves to be clearly drawn. The important practical point is, of course, the occurrence of gastro-jejunal ulcer in connection with the use of unabsorbable suture material. With the etiology so clearly shown in so many instances, it is a complication which should be avoidable by changes in technique. In jejunal ulcer, however, which occurs at definite distance away from the suture line, and occasionally apparently after a considerable period of time, I fail to see how the technic of the suture itself can be the most important factor. It seems to me that we must look further than the question of suture material. These cases are, of course, much rarer than gastro-jejunal ulcer, but still they do occur. I feel that Dr. Bottomley's suggestion that they may be the secondary expression of a septic focus elsewhere is very important, practically as well as theoretically. Such a focus, existing in the abdomen, might also tend reflexly, to increase the gastric acidity. This certainly occurs in stomachs otherwise normal, and I see no reason why it should not tend to occur following gastro-enterostomy.

In reply to Dr. Churchman's question in regard to the x-ray, apparently the actual crater is rarely shown by the x-ray. Other evidence shown more indirectly by the x-ray study is apparently of great importance in diagnosis.

Original Articles.

VAGINAL DELIVERY AFTER CESAREAN SECTION.*

By NATHANIEL R. MASON, M.D., F.A.C.S., BOSTON,

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OWING to the steadily increasing indications for the performance of Cesarean section, particularly in this country in recent years, there has developed a large class of women who must

face pregnancy and childbirth after previous Cesarean section. The majority of obstetricians consider the proper treatment of these cases is determined by the expression,—to them an axiom,—“once a Cesarean, always a Cesarean.”

These men base their view on the theory that the scar in the uterus from a former Cesarean section has weakened the uterine wall at that point, and makes rupture of the uterus a grave danger in the event of subsequent pregnancy and labor.

The object of this paper is to point out that the patient who has had a Cesarean section properly done, for some cause other than a pelvic indication, may with safety, as far as the Cesarean scar is concerned, be subjected to future pregnancy, labor and vaginal delivery, provided her convalescence has been afebrile and free from uterine infection.

A series of experiments was made in 1910, by the writer¹ and Dr. John T. Williams on pregnant cats and guinea pigs, to determine the relative strength of scar and uterine wall. Weights were suspended from sections of the uterine wall containing linear scars, and it was found that rupture invariably occurred in the muscle and not in the scar. These results confirmed the clinical observations of Schauta², who says that with modern closure of the wound rupture will more likely occur outside the scar.

Dr. Brodhead of New York in a letter to the writer a few days ago expresses the following views: “If patient has had Cesarean for eclampsia, placenta previa, or minor contraction, I can see no reason why she should not have a chance with normal labor. If the contraction is major, induction of labor at 8 months would probably be safer for the mother, at least. In other words, with marked contraction at term with a large child I would advise a second Cesarean.”

Dr. Palmer Findley,³ in a recent impartial and exhaustive analysis of rupture of the Cesarean scar, expresses himself in the following words: “I confess at the onset to have entertained a prejudice in favor of repeated Cesarean section in all cases to forestall a possible rupture, but as the work developed in my library I was led to conclude that such a position is untenable.”

I am told by Dr. Frank Konrad, who has recently been for 16 months in charge of the University Frauenklinik at Freiburg during the absence of Professor Krönig at the front, that the latter holds strongly to the view and constantly gives voice to it in his teaching, that a patient who has had a Cesarean section may with safety in a subsequent pregnancy be allowed to pass into labor and be delivered by the vaginal route.

To aid in securing a firm scar, labor should be well established, as pointed out by Dr. Charles M. Green,⁴ before the operation is performed. He states “that the scar will be thicker and stronger if the closing sutures are applied to a uterine wall thickened by several hours of contractions, than when placed in the thin, com-

* Read before the Obstetrical Society of Boston, Nov. 28, 1916.

paratively flabby wall of a uterus incised before labor has begun.

The longitudinal fundal incision is likely to give the best result from the standpoint of future strength of the scar, particularly where future Cesarean sections are contemplated. The muscular development of the uterus is greatest high on the body. The low median incision of earlier days is quite likely to produce a serious complicating factor. Omental and intestinal adhesions over the anterior face of the uterus occur in many cases after the operation. These adhesions can be well dealt with at a future operation when situated high on the uterus, but if low down, because of their close proximity to the bladder, it is often difficult to free them without injury to the bladder. It is also extremely difficult to differentiate the tissues, and from fear of doing harm to the bladder, proper coaptation of the muscular walls of the uterus is frequently not obtained at the lower angle of the wound.

Palmer Findley points out that the transverse fundal incisions are relatively insecure.

Since eventeration has been abandoned a shorter and therefore stronger scar has resulted. In the performance of the operation certain points of technic should be mentioned as being essential to the securing of a firm uterine scar. The principles of Sanger⁶ should be carried out. These principles are the layer method of suturing, sutures closely placed which include the entire uterine muscle but avoid the decidua, the rolling in of the peritoneal coat and tying the sutures firmly with three knots.

Dr. Newell lays stress on a point in closure which is of vital importance. It is to place a deep suture through the uterine musculature, both above the upper angle and below the lower angle of the wound because at these points splits in the muscular tissue frequently occur in the extraction of the body and head of the child. It seems probable that failure to repair such splits is not infrequently the direct cause of an imperfect scar, because in a large proportion of the reported cases of faulty scars the weakened areas have been described at the upper and lower angles of the former incision. Lateral splits in the musculature of the uterine wall also occasionally occur because the incision in the uterus is made too small to allow the head to be delivered through it. Thorough inspection of the edges of the cut uterus should be made, by everting it, half at a time, through the uterine incision. These splits when found should always be sutured. It is well to resect the scar at repeated sections and so leave the woman with only one scar when she has had several operations.

The character of the suture material in the absence of infection probably plays but little part in the subsequent strength of the scar. Chronitized catgut of all materials used has given the best results. Silk and linen have been discarded at the Boston Lying-in Hospital.

When silk and linen were employed local infection of the wound and the subsequent development of ventral herniae were more common than at the present time. The writer at the time of the general wave of enthusiasm for iodized catgut employed it in the uterus and experienced the misfortune of having two patients develop utero-abdominal fistulae following Cesarean section.

The qualities of strength, slow absorbability and tolerance of infection without itself becoming infected raise the question as to whether or not kangaroo tendon might be an ideal suture material for uterine closure.

The following case illustrates the permanency of kangaroo tendon:

CASE 1. A. B. High forceps operation at the Boston Lying-in Hospital in 1910. Two Cesarean sections followed at the Salem Hospital in 1912 and on Nov. 28, 1913. At the second section, medium kangaroo tendon was used for the uterine closure. At a third Cesarean section performed by Dr. Newell at the Boston Lying-in Hospital on Feb. 22, 1916, nearly 2 years and 3 months after the last one, the former Cesarean scar was found to be firm and the sutures still in place.

Where there is a reason to suspect that the method of closure of the uterine wound after a Cesarean section has been faulty or infection in the convalescence has been present, we are not justified in permitting a labor of any length to occur. Such cases may tolerate labor and vaginal delivery, but it is not wise to take the risk of subjecting a uterus to labor in which the scar may be imperfect.

The operation of Cesarean section has been performed 393 times at the Boston Lying-in Hospital, beginning with the first one by the late Dr. George Haven on July 15, 1894, and ending with the most recent one by the writer on Nov. 24, 1916. Of these operations 106 have been repeated sections. The 106 repeated sections were performed on 73 women; that is, second sections were done on 49, third sections on 19, fourth sections on 2, fifth sections on 2, and a sixth section on 1.

In the early days of doing the operation, careful closure was sacrificed to speed, and proper apposition of the tissues of the uterine wall was not always secured. As a result in these cases, the uterine walls healed imperfectly and became permanently weakened. Many of the cases formerly operated upon, we judge from our present viewpoint to have been manifestly unsuitable for Cesarean section. Some of these earlier cases were patients who had been long in labor, often with ruptured membranes—women who had been examined many times in unclean fashion and those upon whom many attempts at operative delivery from below had been made. The sequence of abdominal section upon these women was puerperal infection, with marked local manifestations in the uterine

wound. A number of these cases who had been subjected to these unfavorable conditions again became pregnant, were allowed to have labors of varying duration and then repeated Cesarean sections performed. In not a single instance has any one of these 106 repeated sections come to grief either in a subsequent pregnancy or labor. To be sure, some of these cases showed uterine walls that were dangerously thin, and in several instances the operator found areas in the uterus covered by tissue amounting to hardly more than peritoneum. The account of these cases is given in the reports that follow.

The following reported cases are, with one exception, confined to those collected in this community, in order to be certain of their authenticity. The histories have been obtained from hospital records or directly from the men who have been in charge of the patients. The names of the attending obstetricians and surgeons are mentioned in most instances to call attention to the fact that these cases are occurring not infrequently about us with satisfactory results.

CASE 2. S. H., a colored primipara of 16, had a first Cesarean section for a justo-minor pelvis performed at the Boston Lying-in Hospital on Feb. 5, 1898. The operation was performed after 19 hours of labor, the patient being fully dilated and with ruptured membranes. A septic convalescence followed, in the course of which the entire abdominal wound broke down. She has had five sections since that time, one of which was a twin birth. Some of the incisions have been in the lower abdomen starting from just above the symphysis pubis. Such extensive adhesions formed after the first operation that the five subsequent ones have been extra-peritoneal. At the last operation, the sixth section on Oct. 14, 1916, Dr. Torbert found an area in the lower third of the scar of the size of the palm of the hand, close to the bladder, covered over only by peritoneum. A careful plastic has placed this patient, we trust, in a position to hold the record of the world for Cesarean section.

It seems not unlikely in this case that the dehiscence in the musculature of the uterine wall may well have been the sequence of former Cesarean scars low on the anterior face of the uterus in close proximity to the bladder. The well-known prevalence of Neisser infection in the colored race may also have been a causative factor in the weakening of the scar.

CASE 3. R. C. This patient was a rachitic dwarf who had five Cesarean sections performed at the Boston Lying-in Hospital. The first one was done on Feb. 20, 1909, and the last one on Aug. 30, 1916, by Dr. Torbert. Most of the incisions which had been made were the low longitudinal ones starting from just above the symphysis pubis. The following note in part was made descriptive of the last operation: "Membranes not only adherent to the uterine wall in many places, but in some spots had actually coalesced with the old uterine scar which at these

points was as thin as paper. Deemed advisable to remove this portion of the uterine wall. Piece about 3 cm. in diameter excised. Ventral abdominal hernia repaired at the same time. Good convalescence."

In this instance again the uterine incision was not far removed from the bladder.

CASE 4. J. W., a colored primigravida of 19, with a generally contracted pelvis, was delivered by Dr. Torbert at the Boston Lying-in Hospital by Cesarean section on Sept. 26, 1908. Her convalescence was complicated by an acute dilation of the stomach and a pelvic peritonitis. A second Cesarean section was done by Dr. Kimpton at a private hospital on Jan. 23, 1910. The uterus was sutured in two layers with No. 1 chromic catgut. A loop of small intestine was found to be very adherent to the fundus of the uterus but was not disturbed. The new incision was made through the former scar and extended up to the adherent gut. Convalescence uneventful. About two months later, on March 25, 1910, she entered the Boston City Hospital for acute appendicitis and was operated upon by Dr. Blake. At this operation the loop of bowel adherent to the fundus of the uterus was removed, excising with it a portion of the uterine wall. A third Cesarean section was done by Dr. De Normandie on August 12, 1911. At this operation the anterior wall of the uterus was found to have a fibrous glistening appearance, and in the centre of it, over an area 3 inches by 4 inches in size, there was only a thin peritoneal covering. The thin tissue was excised, the edges of the muscle were refreshed and brought together. The convalescence was complicated by a uterine infection during the first 10 days. A fourth Cesarean was done by Dr. Green on April 15, 1913. Uterus presented a normal appearance. Good convalescence.

The imperfect scar found at the third Cesarean section followed an excision of the gut from the uterine wall at the time of the appendectomy. A Neisser infection may also well have been present in this colored patient. The fourth section gave evidence of excellent repair of the uterine wall.

These three patients, whose histories we have just taken up, are the only ones in our repeated sections who showed serious weakness in their former scars. In many other cases the scars were visible and often contained thin areas along their course.

CASE 5. Dr. Green⁷ reports a spontaneous rupture of the uterus in the ninth labor of the patient after 7-12 hours of pains. She had been seen at her home by the house officers of the Boston Lying-in Hospital, who found a transverse presentation and a contraction ring. While arrangements for transfer to the hospital were being made, the contraction ring disappeared, labor stopped and shock developed. Dr. Green found on her admission a shoulder presentation with the left arm and a pulseless cord prolapsed through the fully dilated os. The feet of the baby were easily palpable under the abdominal wall. He delivered the patient by podalic version of a dead foetus weighing 4-4 lbs.

The abdomen was promptly opened while the pulse was 180. Dr. Green described his findings and operation as follows: "The uterine rent extended diagonally from well above the left broad ligament; downward close to the bladder peritoneal reflex, thence over the upper border of the right broad ligament; four fingers could be passed between bladder and uterus into the vagina; there was no rupture of large vessels. Hysterectomy was considered, but uterine suture was decided on. Deep muscular sutures of linen were passed until I came to the bladder, where it was impossible to suture the uterine muscular wall, and only the peritoneum was closed." The patient convalesced well. Four weeks later an examining finger passed through the torn cervix could feel no trace of the unsutured rent between bladder and uterus, it having evidently closed in the involution. Seventeen months later, an externe from the hospital attended the patient in her home in her tenth labor. The breech presented high, and on rupture of the membranes both feet and a pulsating cord prolapsed into the vagina. Easy traction delivered a 6½-pound living baby, the whole labor having lasted 8 hours. Convalescence was normal.

Although this patient did not have a Cesarean section scar, the uterus was forced to tolerate a strain fully as severe.

CASE 6. Dr. Green⁸ also reports a case of complete traumatic rupture of the uterus with the escape of the placenta into the peritoneal cavity. No suturing was done and the woman recovered. She subsequently delivered herself safely in normal labor without uterine trauma.

It would seem reasonable to assume from the history of the above two cases that if the uterus can safely withstand pregnancy and full-term labor following such trauma it should be able to accommodate itself in pregnancy and labor to a well-healed Cesarean section scar.

CASE 7. M. F. A Cesarean section was performed by Dr. DeNormandie before the advent of labor at the Boston Lying-in Hospital on this patient Aug. 16, 1911, because she had a justo-minor pelvis and the head could not be pushed into the brim. The baby weighed 7 1-2 pounds. The convalescence was complicated by a uterine sepsis of 2 weeks' duration. The patient entered the hospital a second time in hard labor with the head bulging the perineum, on Nov. 2, 1913. A labor of three hours and 10 minutes was terminated by a low forceps operation and a child weighing 7 lbs. 1 oz. delivered. The third pregnancy ended with a precipitate labor of 2 1-4 hours, an 8-lb. child being delivered. The patient was attended at her home by an externe house officer from the Boston Lying-in Hospital, and it was not until after her delivery that the externe house officer learned she had been the subject of a previous Cesarean section. A fourth pregnancy was terminated on Aug. 27, 1916, at the State Infirmary in Tewksbury by a normal labor lasting 8 hours. Baby weighed 7 lbs. 7 oz.

The forces of nature effected a normal descent through the pelvic canal three times in suc-

cession following a previous Cesarean section, and twice before there was an opportunity to contemplate forestalling vaginal delivery by the abdominal route.

CASE 8. H. L. Cesarean section at the Boston Lying-in Hospital by Dr. Hubbard for contracted pelvis on Aug. 13, 1906. Female child weighed 7 lbs. A second pregnancy was terminated by induction in England at 8 months with good results for mother and child. A second Cesarean section was done at the end of the third pregnancy at the Boston Lying-in Hospital by Dr. Torbert on Jan. 15, 1913. Female child weighed 6 1-2 lbs. Nothing remarkable was noted about the uterus at the time of operation.

CASE 9. Mrs. A. Dr. Young tells me the following obstetric history of one of his patients. The second pregnancy ended in a forceps delivery of a 7-lb. child in October, 1911. In the next pregnancy an 8 1-2-lb. child was delivered by Cesarean section on July 25, 1914. A second Cesarean section was performed by Dr. Young on Aug. 25, 1915, for an 8-lb. child. At this operation the mark of the old scar could be seen, but it was solid, no thin places being found. A fourth pregnancy ended in a 4 months' miscarriage on Oct. 14, 1916. Uneventful recovery except for the retention of one small piece of placenta for which a curettage was done.

CASE 10. Mrs. R. Dr. Richard D. Schmidt tells me of a patient whom he attended at 3 normal labors in 1909, 1910, and 1912, the babies weighing 8 1-2, 6 1-2 and 8 3-4 lbs. respectively. Her fourth pregnancy was complicated by the severe hemorrhage of a placenta previa at 7 months, for which a Cesarean section was done by Dr. Sleeper at the Salvation Army Hospital in December, 1913. Baby weighed 6 lbs. The convalescence was complicated by temperature and chest symptoms, making it impossible to exclude local infection of the uterus and pulmonary tuberculosis. Pregnancy occurred a fifth time and labor took place at full term in July, 1915. Dr. J. J. O'Brien, who was in attendance, has told me of the labor. On arrival at the patient's house he found her in hard labor with the os fully dilated and the head low. Pituitrin was given. The pains became at once markedly increased in strength and 10 minutes later, an 8-lb. child was delivered normally. It is worth while to note that the last child weighed within 3-4 of a pound of the heaviest weight of the babies in the 4 previous pregnancies. The entire labor lasted 2 hours. Convalescence was normal.

In this instance we have a patient whose uterus contained a Cesarean scar, but was able to withstand the strong pains of a precipitate labor which became tumultuous at the exhibition of pituitrin.

CASE 11. Dr. Good reports a high forceps operation performed in consultation for a justo-minor pelvis in 1908. The baby weighed 8 1-2 lbs. and was still-born. Following delivery the patient suffered considerably from trauma to the bladder and convalesced with a poor perineum. Dr. Good deliv-

ered her by Cesarean section of a baby weighing 8 3-4 lbs. in 1909 and by a second section of a baby weighing 8 lbs. in 1911. He again delivered her twice by a low forceps operation, after a hard five-hour labor of an 8-lb. baby in 1913 and after a vigorous six-hour labor of a 9-lb. baby in 1915. All four convalescences were normal.

In this instance the last child weighed more than any one of the previous babies, including the two born by Cesarean section. Forceful pains, coupled with slight cervical and perineal resistance, afford us the explanation of the easy and rapid descent of the head.

CASE 12. Dr. Percy of Arlington reports a case of a patient whose leg was amputated for tubercular disease at the age of 5. One side of the pelvis distinctly flattened. Eleven years ago her first pregnancy was ended by a destructive operation in Labrador. Six years ago she had a hard instrumental delivery. Baby weighed 8 lbs. and had a persistent obstetrical paralysis. A Cesarean section was done 3 years ago by Dr. Howard Lothrop. Baby weighed 7 1-2 lbs. One year ago a high forceps operation was performed. Baby weighed 8 1-2 lbs. and had a slight obstetrical paralysis which soon cleared up.

CASE 13. Dr. Good tells of a patient whose first labor was terminated by a difficult high forceps operation. He performed a Cesarean section in 1911 in her second pregnancy for twin babies and did a low forceps operation in 1915 after an active four-hour labor, delivering an 8 1-2-pound baby. All three convalescences were normal.

CASE 14. M. F. A forceps operation was attempted upon a primipara who had been in labor for 60 hours with no cervical dilatation and no descent of the presenting vertex but failed. A Cesarean section was performed and a child delivered weighing 7 lbs. 7 oz. The immediate convalescence was good, but after a month was complicated by pneumonia and phlebitis for one month. Her second labor was attended by Dr. J. J. O'Brien, but the patient being fearful of a second abdominal operation did not send for him until she had been in labor for 20 hours. Eight hours later she was easily delivered by a low forceps operation of a 9-lb. baby. Convalescence normal. The patient is again four months pregnant.

A labor of 2 1/2 days without progress was followed by another labor more forcible in character, but not one-half as long, which brought the presenting head of the baby, 1 lb. and 9 oz. heavier than the first baby, to the pelvic floor.

CASE 15. Dr. Percy of Arlington tells me of a patient whose first child was delivered normally. Three years ago a Cesarean section was done for placenta previa by Dr. Howard Lothrop. A third baby was delivered normally 8 months ago after a 5-hour labor. All these children weighed about 6 1/2 lbs. Normal throughout.

CASE 16. M. W. A case of antepartum eclampsia was delivered by Cesarean section by Dr. Sleeper

at the Salvation Army Hospital on Feb. 16, 1914. Premature baby weighed 6 lbs. Slight infection complicated the convalescence but a good recovery was made. A second pregnancy ended by normal delivery in twilight sleep at the New England Hospital after a labor of 15 1-2 hours on Sept. 15, 1915. Baby weighed 8 lbs. Excellent convalescence. Patient is now again 7 months pregnant.

The extra-pelvic cause which had been the indication for the section, being removed, normal labor, aided by "Dammerschlaf," took its natural course.

CASE 17. P. M. Colored primipara of sixteen. Cesarean section at the Salvation Army Hospital by Dr. Frank W. Sleeper for eclampsia on Feb. 9, 1913. Female child weighed 6 lbs. Stormy convalescence from a general infection running a high temperature off and on for 5 weeks. A second pregnancy ended in a normal delivery at the Long Island Hospital on May 20, 1914, after a labor of 16 hours. Female child weighing 6 lbs. 8 oz. A third pregnancy ended in a normal delivery at 8 months at the Boston City Hospital, Oct. 7, 1916, after a labor of a few hours. Male child weighed 4 lbs. 12 oz.

CASE 18. J. S. Dr. John T. Williams reports the case of a patient who had had a Cesarean section by Dr. Crandon for undilatable contraction ring after failure of forceps delivery by patient's physician. Two years later, on Nov. 22, 1914, Dr. Williams attended the patient at a normal delivery after a five-hour labor. A retained placenta made it necessary to enter the uterus with the hand to extract it, and on digital examination allowed the finger tips to pass into a cul-de-sac at the upper end of the scar where the thickness of the uterus was not over 1-2 inch.

These patients in the last two cases were delivered normally when the cause for the Cesarean section operation was no longer present.

CASE 19. E. P. A primipara had a Cesarean section performed by Dr. Green at the Boston Lying-in Hospital on April 2, 1914, because of a just-minor pelvis and failure to engage the head in the brim after 10 hours of strong first-stage pains. Baby weighed 9 lbs. The convalescence was complicated by a mild sepsis of 10 days' duration, at the end of which time a piece of membrane was passed. The patient again appeared at the hospital after 2 hours of hard labor on June 16, 1915, fully dilated with the head on the perineum. She was delivered by a low forceps operation of a 6-lb. baby. A slight uterine infection lasting 5 days complicated the convalescence.

CASE 20. Dr. Hubbard tells of a patient whose first labor began three weeks later than the expected time. The child was large and the attending physician, failing in his attempt at forceps delivery, called in a consultant who performed a Cesarean section. In the second pregnancy labor was induced when the patient was a few days overdue in order to secure a smaller child than before. This labor was prolonged, but otherwise normal.

I understand from Dr. Hubbard that he is now taking care of the patient for the first time in her third pregnancy and that he will decide later whether her delivery will occur by the vaginal or abdominal route.

CASE 21. A. H. This patient had two Cesarean sections done for a flat pelvis, one by Dr. Erb at St. Elizabeth's Hospital in 1907 and the other by Dr. Holmes at the State Infirmary in Tewksbury in 1910. The babies weighed between 8 and 9 lbs. A third pregnancy was terminated by an easy low forceps operation by Dr. Green at the Boston Lying-in Hospital on March 7, 1914, after a prolonged first stage with signs of exhaustion. Baby weighed 5 lbs. 4 oz. Uneventful convalescence.

CASE 22. Dr. Frank Williams reports a case where high forceps was attempted and failed. A Cesarean section was done and a 12-lb. baby delivered. The convalescence was complicated by a severe septic infection. Two years later the patient delivered herself normally of a 6-lb. child. Convalescence was normal.

These four cases of smaller babies delivered vaginally followed the delivery of larger babies by Cesarean section.

CASE 23. E. J. A colored woman with a justo-minor pelvis had three Cesarean sections performed at the Boston Lying-In Hospital in 1899, 1901 and 1907, the babies weighing 6 lbs., 6 lbs. 6 oz., and 6 lbs. respectively. The first section was done after 11-12 hours and the second section after 9 hours of ineffective labor. The third section was done before the advent of labor. In her fourth labor at the hospital in 1908 she delivered herself normally, after 14 hours of strong pains, of a child weighing 6 lbs.

CASE 24. J. W. A woman with an irregular pelvic contraction from hip disease had three Cesarean sections done at the Boston Lying-in Hospital in 1900, 1901 and 1905 and the babies weighed 8 lbs., 7 lbs. 8 oz., and 7 lbs. 8 oz. respectively. At her fourth labor at the hospital in 1908 her pains were harder than ever before and she delivered herself normally of a baby weighing 7 lbs. 3 oz., which was 13 oz. less than the weight of the baby for which section was originally performed.

CASE 25. M. S. An early miscarriage ended this patient's first pregnancy. A right salpingo-oophorectomy for an extra-uterine pregnancy was done in the Somerville Hospital in 1911. A Cesarean section was done by Dr. Newell for a justo-minor pelvis after 27-34 hours of labor at the Boston Lying-in Hospital on Nov. 20, 1914. Female child weighed 5 lbs. 3 oz. Normal convalescence. Nearly two years later the patient entered the Boston City Hospital in labor at full term. Labor lasted 24 hours, but at the end became so rapid that the house staff did not reach the patient until after delivery. Male child weighed 5 lbs. 4 oz. Normal convalescence.

CASE 26. I. N. The writer had charge of a primipara of 24, whose labor started with a rupture of the membranes. After 12 hours of nagging pains the head remained floating and the os undilated. Cesarean section was done on Jan. 26, 1914, for a 6-1-4-lb.

baby. A second labor vigorous in character brought the baby to the pelvic floor in 7 hours. A low forceps operation was done on Sept. 21, 1916, and the baby weighed 5 lbs. 5 oz.

More vigorous pains than in former labors was the factor in these four cases, which in three produced normal delivery and in one a low forceps operation after previous Cesarean section.

CASE 27. A primipara of 27 had 12 hours of labor, but the head remained high, the os undilated and the fetal heart dropped to 100. A Cesarean section was performed by Dr. Torbert and a 7-lb. baby delivered. Convalescence slow because of poor general condition. The general health of the patient improved and two vaginal deliveries followed the section, attended by the family physician. The patient had a 16-hour labor Oct. 24, 1915. The head was posterior. Two doses of pituitrin were given and a baby was delivered weighing 7 lbs. 6 oz. The patient again fell in labor with a posterior head Aug. 19, 1916, and after 6 hours of pains, aided by 2 doses of pituitrin, was delivered by low forceps of a 7 lb. 3 oz. baby. Excellent convalescence after both forceps deliveries.

Each one of the babies delivered by low forceps weighed more than the Cesarean baby. The improved general health of the patient caused stronger pains than before, and these, increased by pituitrin, brought the baby down to the pelvic floor.

CASE 28. Dr. Broadhead writes me of a case of normal labor following Cesarean section, recently reported by him at the Sloane Alumni meeting. The patient had a true conjugate of 8.50 cm. The baby had a biparietal diameter of 10 cm. and weighed 9 lbs. 12 oz. He says: "My patient had the notion in her head that she had not had a long enough chance to give birth and that the Cesarean had been perhaps not necessary. She was therefore very anxious to have a 'try,' and I agreed to this, provided she came to the hospital at once after beginning labor. The labor was very easy, terminating with several easy tractions with low forceps."

CASE 29. I. L. Dr. John T. Williams reports a personal case. A Cesarean section was done after 4 days of false pains, the pulse having risen in rate and the head remaining high. Baby weighed 6-1-2 lbs. Good recovery. In a second labor the patient having requested a vaginal delivery, after 14 hours of pains the os had dilated but slightly. A moderately hard forceps was performed. Baby weighed the same as before.

These two patients, desiring to avoid a second Cesarean section, were allowed to have labors, both of which were terminated by a forceps operation.

CASE 30. A. H. Colored primipara of eighteen. Cesarean section at the Boston Lying-in Hospital by Dr. Newell for a justo-minor pelvis on Aug. 30, 1901. Female child weighed 5 lbs. 11 oz. Normal convalescence. Second pregnancy ended in a mis-

carriage July 4, 1902. Second Cesarean section at the Boston Lying-in Hospital by Dr. Green on April 5, 1906. Male child weighed 7 lbs. and 8 oz. Normal convalescence. Fourth pregnancy ended in a miscarriage at 6 months at the Boston Lying-in Hospital on Oct. 6, 1907. Ten-ounce male macerated foetus. Fifth pregnancy was terminated by a Cesarean section at the Boston Lying-in Hospital by Dr. Newell on Oct. 5, 1909. Female child weighed 6 lbs. 9 oz. Nothing remarkable was noted about the uterus.

Cesarean sections and interruptions of pregnancy alternated in this case, but the uterus showed no impairment in its integrity when seen at the end of every other pregnancy.

CASE 31. F. P. The patient had had four difficult operative deliveries followed by four still-births. A Cesarean section was performed by Dr. Green at the Boston Lying-in Hospital on March 3, 1915. The indications were the past history and an obstetric conjugate of 8 cm. Baby weighed 7 lbs. 6 oz. Convalescence uneventful. The patient again entered the hospital on Sept. 12, 1916, and came under the writer's care. She was sent in for a second Cesarean section after 24 hours of hard pains. An examination showed a woman in active labor with a pulse of 110 of rather poor quality. The uterus had a tendency to become tonic and the head was floating. An unsuccessful attempt at a high forceps application was made. An internal podalic version was cautiously performed, with good result for mother and child. Baby weighed 8 lbs. 1 oz. A manual examination of the interior of the uterus after delivery revealed no trace of the former Cesarean section scar.

The patient's previous history indicated Cesarean section as the proper mode of delivery. It was not performed, however, because the length of labor, the tonic uterus and her poor pulse jeopardized the safety of the mother if the peritoneal cavity were to be opened. High forceps failed, and craniotomy was deemed undesirable because the baby was alive. This last baby, delivered by version, weighed 11 oz. more than the one delivered by Cesarean section. The uterus which contained a Cesarean section scar and had become tonic from a long labor withstood an internal podalic version.

A search throughout the community to find cases of rupture in the scar of the Cesarean uterus in subsequent pregnancy or labor has revealed but one case, and that a spontaneous rupture in the scar of a full term pregnancy.* This case is certainly unique in view of the fact that the suturing of the uterine wound was not at fault and the convalescence from the operation was afebrile.

This case is one of such extreme rarity that it seems proper to classify its occurrence among the accidents of surgery which the obstetric surgeon of the present day must face as the obstetric attendant of the past has met spontaneous rupture of the normal pregnant uterus in labor and embolism in the puerperium.

* Personal communication by Dr. C. H. Hare.

CONCLUSIONS.

If the advantages of the improved technic of the present day are employed, and the convalescence is free from infection, the Cesarean scar will be strong enough to withstand the distention of a full-term pregnancy and the strain of labor.

REFERENCES.

- ¹ Mason and Williams: BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. cxlii, No. 3, pp. 65-72, Jan. 20, 1910.
- ² Schauta. (Quoted by Findley): Amer. Jour. Obst., Vol. lxxiv, No. 3, pp. 411-432, September, 1916.
- ³ Palmer Findley: Amer. Jour. Obst., Vol. lxxiv, No. 3, pp. 411-432, September, 1916.
- ⁴ Green: BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. cxlii, No. 13, pp. 441-450, March 30, 1916.
- ⁵ Palmer Findley: Amer. Jour. Obstet., Vol. lxxiv, No. 3, pp. 411-432, September, 1916.
- ⁶ Sänger: "Der Kaiserschnitt bei Uterus-fibromen nebst vergleichender Methodik," Leipzig, 1882.
- ⁷ Green: BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. cxlii, No. 20, pp. 669, 670, May 19, 1910.
- ⁸ Green: Trans. Am. Gyneec. Soc., 1888, p. 209.

THE REASONS FOR THE RE-ENTRY OF HOSPITAL PATIENTS.

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A SHORT time ago the writer listened to some tales and opinions, which expressed in a general way the feeling entertained by many concerning the treatment which patients receive in the larger hospitals. The burden of these complaints was that patients were often operated upon unnecessarily and that they were many times forced to return owing to the unsuccessful treatment accorded them. These criticisms were not directed toward any institution in particular; but they aroused the interest of the writer and led him to investigate the reasons for the re-entry of patients, in order to ascertain whether their return was due to inefficiency of hospital treatment, to their own inefficiency, or to vicissitudes of life encountered by some, if not by all. Naturally, over the last two causes the hospital can exert but a slight control, and in most instances, none whatever.

For the purpose of this investigation, 100 cases, all admitted more than once, were taken at random from the records of the Gynaecological Service, by one who did not even know for what purpose they were intended. Although all of these women have been treated by the service, a few have been admitted to the surgical departments of the hospital as well, and a small number have been at other hospitals. As it was impossible to find out exactly their ailments while there, only entries to Boston City Hospital wards are considered.

This paper is intended neither as a defense nor as an apology for the treatment of hos-

pital patients, but attempts to state the plain facts in the cases which follow:

NUMBER OF CASES ADMITTED	TIMES IN HOSPITAL
65	2
23	3
6	4
3	5
3	6
TOTAL 100	20

Broadly speaking, the causes for the re-entry of these patients may be classified under the following headings:

1. A new ailment.
2. Operation deferred:
 - (a) Unfavorable time to operate.
 - (b) Inconvenient time for patient.
3. Operation not accepted by patient.
4. Completion of operative procedure already begun.
5. Recurrence of disease (cancer, pelvic inflammation, etc.).
6. Unsatisfactory result of operation.

Owing to the fact that the cause often varied with each admission, and that only a few cases could be mentioned individually, statistics referring to the above scheme were unsatisfactory and confusing. For discussion, the series has been divided into 5 groups according to the number of times each patient was admitted to the wards.

The results from the study of any collection of cases vary somewhat, according to the interpretation of the individual who carries on the work. While realizing fully that in the present instance individual judgment plays a greater part than is usual, yet for that particular reason the consideration of the present series by one to whom many of its members are known, may approach nearer the truth. If there has been a leaning toward either side, it has been toward classifying questionable cases as failures of treatment. To some the grouping of certain cases may seem unjust.

It is the partial successes or failures which especially concern us, and in order not to be too tedious, they have been summarized wherever it has seemed possible.

FIRST GROUP: TWO ADMISSIONS.

Of 64 women treated twice, there were 52 whose second entrance had no connection with the efficiency of their previous hospital treatment, and of these nothing need be said, except that their return was due to various accidents, to incurable malignant disease, miscarriages, pelvic inflammation, operations advised when first in hospital and deferred at that time, etc. A certain number also refused the treatment offered at the first visit, but returned later from choice or necessity.

The partial successes number 12, with 1 failure.

Five of these were post-operative herniae.

CASE 1. Complete hysterectomy for cancer. Return after seven years. Very obese. Fitted with belt. No recurrence of cancer.

CASE 2. Intestinal obstruction,—colostomy. Later resection and lateral anastomosis of sigmoid flexure; drained. Return after six months. Old and alcoholic. Fitted with belt. No recurrence of cancer after 11-2 years.

CASE 3. Dermoid cyst and ventral suspension; drained. Return after six months. Repair of hernia, and good result.

CASE 4. Repair of cervix and perineum, ventral fixation, appendectomy. Return after three years. Hernia for one year. Repaired with good result.

CASE 5. Fibroid,—hysterectomy, appendectomy. Return after one year, with small hernia. Alcoholic; fitted with belt.

CASES 6, 7 and 8. Three cases of pelvic peritonitis from infections: one (Case 6) not operated upon at either admission; two (Cases 7 and 8) operated conservatively. One of the latter two was operated upon a second time for the removal of the remaining tube; the other returned with a fresh gonorrheal and syphilitic infection and departed without a second operation.

CASE 9. Plastic operation at the first visit. Returned one year later with procidentia and was operated upon with relief. A retroversion was uncorrected at the first operation.

CASE 10. Complete perineal tear with a small rectovaginal sinus, which was repaired three months after the first operation.

CASE 11. Operated for a kidney in the pelvis. Returned after three months for intestinal adhesions. At this time the uterus was suspended and a tube and ovary resected.

CASE 12. At first operation, thought to be cancer, and accompanied by pelvic peritonitis, multiple abscesses and intestinal obstruction. Operated a second time, after a short interval, for the freeing of intestinal adhesions. The first operation was stopped by hemorrhage. This patient is alive and well. Source of original infection unknown.

SECOND GROUP: THREE ADMISSIONS.

In this group there are 23 cases, 18 of which returned for various troubles for which the hospital cannot be held at all accountable—as examples:

CASE 1. Entered with puerperal sepsis. Entered twice more with attacks of phlebitis.

CASE 2. Entered with miscarriage and gonorrheal infection. Entered twice later with salpingitis and pelvic inflammation. No operations necessary so far.

CASE 3. Entered three times, at long intervals, for miscarriage.

The following two cases are classed as partial successes:

CASE 1. Fractured pelvis from a late forceps delivery outside the hospital with a slough and tear of the bladder wall. Has returned twice since for the repair of bladder fistulae which are numerous and small. The operations are all difficult.

CASE 2. Entered first for a miscarriage. Second admission was to a surgical service, where a myo-

mectomy was performed. This failing to give relief, a hysterectomy was performed by the Gynaecological Service three years later.

The above are both partial successes, and yet, in a certain sense, the results are what must often be expected in the classes to which all these particular ailments belong, and it is hardly fair to blame the surgeon for the results.

The following are classed as failures:

CASE 1. Carcinoma of the cervix, operated by Wertheim's method. Second admission two months after the original operation for post-operative adhesions and four months after her first visit had recurrent carcinoma.

CASE 2. After partial removal of the appendages and appendix, at her second entrance, the uterus was not suspended. A little over a year later the uterus was retroverted and an operation for relief was necessary.

CASE 3. An abdominal operation had been performed some years previous at another hospital. The first operation at the Boston City Hospital was a curettage, the uterus being retroverted.

At the time of the second visit, the tubes and one ovary were excised and the uterus fixed.

Four months later the remaining ovary was so enlarged that it had to be removed and the uterus again fixed.

Cases 2 and 3 seem to show errors in judgment or technic which may happen to anyone. Case 1 is on the border-line, for cancer may return, no matter how skillful the first operation.

THIRD GROUP: FOUR ADMISSIONS.

This is made up of 6 cases: 5 admitted for sequelae of pelvic infections, after labor, abortion and gonorrhoea. For these the hospital is not responsible. Three of the five became pregnant after a conservative operation: one an ectopic gestation.

The sixth is counted as a partial failure, and is given in detail.

CASE 6.

Admissions.

1905. Age 41 years. Married 16 years. 8 normal labors; 8 premature—last one 4 years previous. Repair of right inguinal hernia.

1911. Prolapse. Repair.

1914. Appendectomy. Removal of gallstones.

1915. Repair of hernia in appendix wound and old umbilical hernia of 17 years' standing.

FOURTH GROUP: FIVE ADMISSIONS.

Of the three cases comprised in this group, the return of the first two cannot be charged against their treatment. Case 1 began as an extensive pelvic infection after an induced abortion, abscesses were opened, a hysterectomy performed in New York, and her last admission was for acute retention of urine, due to "nerves."

Case 2 is a poor weak woman who has had frequent miscarriages, ending with salpingitis and operation.

Case 3 is a failure, the details of which are given below.

Age 52 years. Widow 37 years. One child 38 years ago.

Admissions.

1903. Ulcer of bladder. At this time vesicovaginal fistula made.

1903. Fistula closed.

1905. Cystitis treated.

1911. Repair of vesicovaginal fistula—partial success.

1915. Vesicovaginal fistula persists—no operation. Left against advice.

This was probably a genital tuberculosis.

FIFTH GROUP: SIX ADMISSIONS.

This includes three cases, two of which have been treated in part upon the surgical services.

CASE 1. Age 53 years. Widow 19 years: Two children.

Admissions. Surgical:

1912. Trifacial neuralgia. Three branches cut.

1912. Chronic mastitis—breast amputation.

1912. Alcohol injection third division.

1913. Third division resected in mouth.

Admissions. Gynecological.

1914. Endometritis: curettage on Gyn. Service.

1915. No operation.

CASE 2. Age 36 years. Married 5 years. Has had two children and one miscarriage.

Admissions.

1906. Miscarriage: curetted.

1907. Miscarriage.

1911. Trachelorrhaphy.

1912. Miscarriage.

In 1913 gave birth to a third living child. Has had two more miscarriages, the last in 1914. Treated at Psychopathic in 1913.

CASE 3. Age 30 years. Married 4 years.

Admissions.

1906. Breast abscess: incised.

1910. Abdominal pain: no operation.

1911. Salpingitis: no operation.

1911. Retroversion: ventral suspension.

1914. Miscarriage: curettage.

1915. Adhesions. Laparotomy. Omentum adherent and under tension: suspension disappeared; pain relieved by freeing omentum.

She has given birth to seven children and has had one miscarriage.

Case 3 is a partial failure; the others are each the surgical history of a life of vicissitudes.

Every hospital has its clientele determined in a large measure by the social status of the hos-

pital and the financial resources of those who make up the community in which it is situated.

Broadly speaking, privately endowed institutions attract a class of patients superior to that which enters institutions supported by a city or commonwealth.

Re-admissions are probably less frequent in the endowed hospitals, since a greater proportion of their patients are able to give themselves a more adequate care, and, by reason of this, a larger percentage receive the full benefit of the hospital treatment. A greater number of these patients are treated at home for minor ailments; whereas the majority of those who enter a large public hospital are not only unable to avail themselves of the full benefit of hospital treatment, but are often compelled, by home conditions, to return for care during comparatively trivial complaints. Moreover, many of our patients must be operated upon in order to maintain themselves and family, whereas if their means admitted and it were possible for them to spend months or years in recovery, operation might sometimes be avoided.

There will always be re-admissions in every hospital because of the failures of surgery, and among patients of public hospitals we have a right to expect a greater proportion on account of the class of cases they receive in carrying out the object for which they were founded.

It is also fair to say that the success of many a surgical procedure is destroyed quite as often by the want of co-operation on the part of the patient as by what may be termed the failure of surgical technic. Of such cases all hospitals receive a share—the public hospital more than its share.

Those unaccustomed to surgery appear to consider the return to a hospital indicative of failure, and we not infrequently hear persons remark on the poor care and unnecessary operations in larger hospitals. Lack of care as a cause for re-entry can be practically discarded, and when we enquire among those of better circumstances in life, we find there are few individuals, whether male or female, who finish their existence without undergoing some surgical operation. This is particularly true in regard to women, for reasons which at once suggest themselves.

Of ten married women who have always had every care that money could provide: one has so far required no surgical intervention; two have had one; two, 2; and five, 3 operations each. These are not in any way selected, and considering that these women have had good care at all times, 3 hospital admissions would not seem excessive for those unable to give themselves proper care at any time.

As a matter of fact, 65% in our series have entered but twice, and only 12% over three times. In the one hundred cases: 10 had no operation; 30, one; 41, two; 15, three; 3, four operations; and 1, five. The above compares

quite favorably with the fortunes of the ten women who were treated by paid attendants, and what follows would seem to indicate that operations upon hospital patients are quite as conservative in regard to number as those performed in private. Of 65 cases twice admitted, 8 had no operation and 22 only one. Of 23 admitted three times, 2 had no operation; 7, one operation; 5, two operations; and 9, three operations. Of the 6 cases admitted 4 times, 1 had a single operation; 4, three; and 1, four operations. Of the 3 cases admitted 5 times, 1 had two; 1, three; 1, four. Of the 3 cases admitted 6 times, 1 had three, and 1 five operations.

Those in our series who have been admitted three or more times to the Gynaecological Service have been usually suffering from pelvic inflammation or its results—ectopic gestation, miscarriage, salpingitis. A few have returned as the result of attempts to preserve their capacity to bear children; for unfortunate results of operations performed; for the completion of operations partly successful; and finally, one or two with incurable disease.

We now come to the summary of those who returned because of the partial success or failure, and many of these are difficult to classify, as opinions will differ.

Among the first group of 64 cases (2 admissions) were 11 cases which are classed as partial successes, and one failure—a recurrent procidentia with a retroversion: uncorrected at the first operation.

In the second group of 23 cases (3 admissions), 3 cases are classed as partly successful and 2 as failures—errors in judgment.

The third group of 6 cases (4 admissions) contains one case which is classed as a partial failure on account of a post-operative hernia.

The fourth group of 5 cases (5 admissions) had but one case classed as a failure, although the infection of the urinary tract was probably beyond control at the start.

The fifth group of 3 cases (6 admissions) contains two cases which must be classed as partial failures.—Cases 1 and 3.

Thus among the 100 women are 15 cases partly successful and 5 failures. It is neither fair nor right to charge against hospital or surgeon the cases of pelvic infection treated in a conservative manner to save the power of reproduction, nor is it an infrequent occurrence for a second infection to follow one which is seemingly arrested.

Every surgical case cannot go smoothly, and the outcome cannot always be perfect; but the results in public hospitals, when we consider the home conditions surrounding most of our patients, will compare quite favorably with those performed in private.

From the study of these cases, it is my conviction: that patients who re-enter a public hospital do so for the most part because of the ordinary risks of life, which are somewhat greater

for them than for those in better circumstances. Less often they return from their inability or disinclination properly to care for themselves or because of the incomplete success of their treatment.

Finally, it is distinctly good hospital care which has prolonged the lives of some and enabled them to return so many times.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

By PAUL THORNDIKE, M.D., BOSTON.

KIDNEY.

Renal Infections. Eisendrath and Kahen (*Jour. Amer. Med. Assn.*, February 19, 1916). The authors describe a series of experiments on dogs and rabbits which show, they think, "infection travels from the bladder to the kidneys, and perinephritic tissue by way of the lymphatic in the wall of the ureter, and not along its mucous membrane." They believe their experiments are the first to show that these lymphatic capillaries in the periureteral sheath play such an important part in ascending infections. The article is an important one, and is illustrated by photographs of a number of microscopic slides. It does not seem to us convincing or complete in its proofs.

Thomas (*Urologic and Cutaneous Review*, 1916, p. 127). This is a clinical study of 240 cases of renal infections from the Mayo Clinic. The author's desire was to find out, if possible, causes predisposing to non-surgical infections of the kidneys. His conclusions follow:

1. Infections elsewhere in the body are predisposing factors in infections of the kidney and ureters.
2. Seventy-three per cent. of these infections are bilateral at the onset of the disease. The lack of pus or bacterial growth of the catheterized urine does not always mean non-infection, but non-active infection.
3. Pyelography and guinea-pig inoculation may be necessary to identify tuberculous infection and to differentiate the unilateral from the bilateral infection. The renal functional tests are frequently not of much value in differentiating between the locations of the infection.
4. Very careful technic should be followed in obtaining specimens for culture, as contaminations frequently occur and negate the bacteriologic findings.
5. Treatment affords relief or cure in 64% of cases, and should always be carried out in some form. No single method will give results in every case, so that all methods should be

tried. Pelvic lavage has probably been the most satisfactory, but whenever possible should be used in conjunction with an autogenous vaccine. Nephrectomy, when necessary, affords complete recovery from general symptoms, and improvement or cure of the infection in the remaining kidney.

H. Cabot (BOSTON MEDICAL AND SURGICAL JOURNAL, Nov. 2, 1916.) In this paper, which Cabot calls a "Consideration of the Production of Immunity," he advanced the interesting contention that, while for the prostatic patient a coexistent pyelonephritis is most evidently an important and serious complication, yet it may also be in a way a protection to him by rendering him in some measure immune; and that if this proposition is a sound one, may it not be possible to produce an artificial immunity by vaccination in a less serious way. Cabot wishes his paper to be regarded only as the beginning of a piece of work which he thinks is based upon sound premises and which may lead far. It is certainly an able and suggestive paper, and one of great interest and of great possible importance.

Renal Tests. Hohlweg (*Medizin. Klinik*, Berlin, March 21, 1915. Some years ago (1907), Hohlweg published a procedure for precipitating the nitrogenous elements in the blood. He now writes confirming the reliability of his method, and insisting upon the importance of studying the residual nitrogen in the blood as a test of renal competence and efficiency.

SHEEL (*Uges Krift für Læger*, Copenhagen, April 13, 1916.) Scheel writes in the same strain, insisting upon the importance of this "rest nitrogen" estimation as a renal test, and goes so far as to state that this measure is as necessary a routine and "even more important" than to examine the urine for albumin. He places the normal amount at or below 40 mg. in 100 cc. of blood and quotes tables of cases showing variations from this standard in various conditions.

Cameron (*Journal American Medical Association*, June 3, 1916). This paper, which contains much information in a small space, represents an investigation of changes in renal efficiency resulting from operations performed under ether anesthesia, and from the back pressure of urine. He has chosen the phthalein test and the urea blood test as his measure of renal function "because of their recognized value and because they are so easily performed." His work is illustrated by various tabulations of his clinical results, and he summarizes his work as follows.

"The agreement between phenolsulphonphthalein and blood urea tests is, as a rule, very striking, although not infrequently a low phenolsulphonphthalein excretion is associated with a normal or only moderately increased blood urea concentration. These tests are of great importance in selecting the most oppor-

tune time for operation so far as renal function is concerned. Following an operation under a general anesthetic there is, as a rule, an increase in blood urea concentration. This increase is most marked after operations on the urinary tract, and especially on patients who already have diminished renal function. In a small series of cases this increase was slightly more marked following operations under gas-oxygen-ether anesthesia than following similar operations under ether. Blood urea determinations are of great value in the diagnosis and prognosis of uremic states. Not infrequently blood urea concentration can be determined when other renal function tests are very difficult or impossible. In this investigation definite symptoms of uremia in uncomplicated cases appeared when the blood urea concentration reached 180 to 200. There is a definite group of patients who have a low phenolsulphonephthalein excretion, but a normal or approximately normal blood urea concentration. Many members of this group withstand a general anesthetic without any complications due to renal insufficiency."

Spontaneous Rupture of Kidneys. Wade (*Journal of Medical Research*, July, 1915). It is the author's claim that a spontaneous rupture of the kidneys may and occasionally does occur solely and entirely because of the degree and rapidity of the swelling of the organ in severe acute parenchymatous nephritis. He presents a fatal case, in which such bilateral rupture was found.

Collateral Circulation (arterial) in the Kidneys. Liek (*Archiv. für Klin. Chirurgie*, vol. cvi, part 3). This is a long article, valuable not only for Liek's own work, but because of the extensive review of previous work on this subject. Liek found that after tying the renal artery, other arteries enlarge and make a collateral circulation to the kidney through its hilum, but that such compensation sometimes does not take place fast enough to prevent renal necrosis; while the existence of a supernumerary artery may, on the other hand, result in the survival of the kidney.

Nephroma and Hypernephroma. Fraser (*Surgery, Gynecology and Obstetrics*, June, 1916). From a morphological and clinical study of 34 cases of so-called hypernephroma. Fraser is firmly convinced that a large proportion of them are derived from renal adenomas and should be called "nephromas," holding the name "hypernephroma" for those comparatively few cases which arise from cortical super-renal cell elements.

Pyelography. Burns (*Bulletin of Johns Hopkins Hospital*, June, 1916). In our last report of "Recent Progress" mention was made of the dangers connected with the use of collargol as injected into the renal pelvis, and Young's paper (BOSTON MEDICAL AND SURGICAL JOURNAL, April 15, 1915) advocating the use of Argentide

Emulsion for this purpose, was recorded. Since then Burns writes claiming that thorium solution is the ideal medium for pyelographic work. He writes in detail of his experiments and claims that the solution is non-toxic, non-irritating, shows a good shadow, with unusual clearness of delineation. The solution is readily and quickly eliminated as it is so thin and watery. It is also perfectly clean, and it is inexpensive.

Excretion of Hexamethylenamine. G. G. Smith (BOSTON MEDICAL AND SURGICAL JOURNAL, October 19, 1916). Much has been written in the last few years on this subject, and among others has recently appeared the work of Falk and Sugiura from the Harriman Research Laboratory of Roosevelt Hospital, stating that in a number of cases of diseased kidneys, the excretion of hexamethylenamine was very small. Smith's paper objects to the statement as misleading, and after a careful study of their findings, and from the results of a study of fourteen cases of his own, Smith believes that Falk and Sugiura's results are misleading, and are not of great practical importance. Smith believes that serious disease of the renal glomeruli does greatly diminish "the ability of the kidneys to excrete hexamethylenamine," but claims that in cases of renal infection which offer the greatest field for the use of this drug, the colon bacillus affects the tubular epithelium, and that, therefore, glomerular excretion is not inhibited, and this drug is, therefore, of use in renal infections.

PROSTATE.

Radium in Cancer of Prostate and Bladder. B. S. Barringer (*Jour. Amer. Med. Assn.*, November 11, 1916). During the last year or two much interest has been taken in the possible usefulness of radium in the treatment of cancer of this region, and this paper is of importance in spite of the small number of cases treated during the last year. Final results of cancer are not considered, but what Barringer calls primary results, have been good. The paper confines itself to a consideration of cases of carcinoma of the bladder and prostate, the writer drawing a sharp line between cases of vesical, as distinct from prostatic, cancer. The treatment in prostatic cancer is applied by means of a radium needle pushed up through the perineum into the affected areas and guided by a finger in the rectum, while the vesical cases were treated by means of a direct cystoscope, through the sheath of which a capsule about one inch long, containing the radium, and to which a double linen thread is attached. The cystoscope is then withdrawn and the radium capsule left in the bladder, the end of the thread appearing at the meatus. The details of technic are described, and the conclusions are:

By means of radium we have caused the rapid and complete disappearance of two bladder carcinomas out of nine treated. These cases were

carcinomatous by cystoscopic appearance and microscopic examination. Time only will tell whether these patients are cured. In one case of prostatic carcinoma, treated for six months, the carcinoma and the symptoms have markedly regressed. In another case, treated three months (possibly borderline) the symptoms have improved. Of three other patients treated, one is dead, one has only recently been treated, and one is doing a full day's work, but could not be reached for examination.

Operative Approach to Prostate. Rochet (*Lyon Chirurgical*, January, February, 1916). In cases where free access to the prostatic region is needed, notably in cancer, the author advocates beginning with a V incision in the perineum, and then mobilizing the whole perineum by separating, from the side, the middle fascia from its attachments to the ischio-pubic triangle, thus freeing the support of the urogenital diaphragm.

Toxicity. Thaon (*Bull. de l'Académie de Médecine*, November 16, 1915). Thaon adds more results to those he has already reported regarding the extreme toxicity of extracts of the prostate. He uses a maceration of 20 or 25 c.g. of bull prostate, which kills a rabbit a few seconds after injection. He believes that a part of the clinical picture seen with enlargement of the prostate is due to this toxic action from the prostate itself.

TESTIS.

Sex Gland Implantation. Lydston (*Jour. Amer. Med. Assn.*, May 13, 1916). During the last two or three years Lydston has published a series of articles (references to which are given in the present one) advocating sex gland implantation as a means of increasing physical and physio-sexual efficiency, and describing in detail his own experimental work along these lines. The present article summarizes his results and beliefs, and adds a detailed description of four more cases of successful testicle implantations. The author concludes his paper as follows:

"Not only do I feel strengthened in my heretofore published impressions of the value of sex gland implantation, notably in the matter of increasing physical efficiency, and especially physio-sexual efficiency, but also I am convinced that, when technic and material are right, and the recipient properly selected, preservation of hormone by the implanted gland for at least a prolonged period is certain. That permanent physiologic and therapeutic advantageous results are equally certain, I am now strongly inclined to believe. Thus far I have observed no case in which the implanted tissue had completely disappeared, or even practically so, prior to from twelve to eighteen months."

Morris (*Jour. Amer. Med. Assn.*, September 2, 1916). Morris reports another case in which a wedge-shaped segment of testicle was cut into three parts, one of which was placed beneath the sheath of the left rectus muscle, another under the right rectus sheath, and the third was in-

serted into the right side of the scrotum. The patient was a man of 27 who had both testicles atrophied as a result of mumps 14 years previous. The result was enlargement and development of the atrophied right testicle with signs of beginning sexual activity, *i.e.*, frequent erections, etc.

Perineal Testicle. Loewe (*Jour. Amer. Med. Assn.*, October 21, 1915) Loewe reports an interesting and rare case of congenital perineal testicle in boy of 12, left testis normal, right scrotum shriveled and empty. Right testis found 5 cm. in front of anus and 2 cm. to the right of median raphe. Operation revealed a partly atrophied testis which was placed in right scrotum, and remained there. Boy's mother stated that the discovery of the absence of the testis was noted shortly after birth, but no attention has been paid to it. Congenital cases of this kind are very rare.

Short Circuit of Vas Deferens. McKenna (*Jour. Amer. Med. Assn.*, June 26, 1915). McKenna describes his technic for this procedure, which he developed as a result of work done on dogs, and reports five cases of this operation performed on men. He means by short-circuiting a "joining together of the patent lumen of the vas with a section of the epididymis or testicle." His operation is essentially a lateral anastomosis between the vas and the tail of the epididymis with a bit of silkworm gut inserted into the opening of the vas and brought out through its wall at a point two inches or so above the opening. This is left in place during the healing in order to assure the patency of the vas during this critical time. The two great essentials for success are a vas quite free from infection and plenty of free sperm in the epididymis section.

Book Review.

American Public Health Protection. By HENRY BIXBY HEMENWAY, A.M., M.D. Indianapolis: The Bobbs-Merrill Company. 1916.

This volume is a monograph on public health and preventive medicine, particularly from the standpoint of the preservation of the health of children and of their mothers, to whom the book is dedicated. It considers in a series of chapters the development of public health work in the United States, the work of the national health agencies, and compares medical and sanitary education in the United States with reference to those in other countries. The medical inspection of schools, the organization of health departments, and the preparation and training of health officers are also discussed in detail. The book aims to stimulate public interest in the problems of general hygiene and sanitation. It is to be questioned whether its style is sufficiently popular to make it successful in this attempt.

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REPORT OF COMMISSION ON HABIT-FORMING DRUGS.

In the spring of 1916 the Massachusetts General Court appointed a commission to investigate the use of habit-forming drugs in this Commonwealth. The Commission consisted of Dr. Frank G. Wheatley, chairman, a trustee of the Massachusetts School for Feeble-minded, Waverley; Mr. Hermann C. Lythgoe of the Food and Drugs Division of the Massachusetts State Department of Health; and Mr. A. C. Webber, assistant district attorney. For six months this commission pursued its investigation and on January 4, 1917, returned its report to the Legislature. In this report many interesting facts are brought to light and a number of recommendations made.

Based on the expert estimate that there are between one and two million habitual narcotic drug users in the United States, it is assumed that there are about 60,000 such habitués in this Commonwealth.

"The habitual user of narcotic drugs is more frequently found in the large rather than in the small cities and rural districts. Data upon which even approximately accurate estimates could be found are not readily available. The drug habit is so prevalent in this State that comprehensive legislation is necessary to deal more effectively with the subject. The lack of effective laws regulating the distribution of these drugs must necessarily foster the drug habit. It is an established fact that the addict will not voluntarily seek treatment for his habit, except in rare cases, until his drug supply is shut off.

"The habit-forming narcotic drugs commonly used in this Commonwealth by addicts are opium and its derivatives, morphine, heroin and cocaine in the form of hydrochloride and rarely other drugs.

"The habitual use of narcotic drugs is not confined to any particular class of people, or to any particular trade, occupation or calling. Some conception of how such use has pervaded the various walks of life is shown in the report from a summary compiled from a record of a single physician engaged in a thriving practice among addicts."

The case is cited of a physician who, in twenty days, wrote over eight hundred prescriptions for narcotic drugs at a fee of \$2.00 apiece. A second physician, within a few months wrote a thousand such prescriptions for drug addicts. In a third case there were found in a single Boston drug store 4055 narcotic drug prescriptions issued by one physician between May and September, 1916. This physician, it is stated, also issued during the same period 156 similar prescriptions, which were filled by another druggist, and ninety-nine which were found in a third pharmacy. In analyzing these facts, the report points out that some consideration should be given to the element of deception that usually enters into such transactions.

"Of 254 people who applied for drugs to this physician in the course of nine months 171 were male and eighty-three were female. Of the males 115 were unmarried and 56 married; and of the females 36 were unmarried and 47 married. Their ages ranged from those saying they were twenty-one to those of sixty-one years.

"The responsibility for the illegitimate distribution of habit-forming drugs rests with the drug 'pedler' and certain physicians and druggists. The 'pedler' plies his trade upon city streets and in and about hotels and restaurants. The ease with which drug prescriptions have been secured and filled had almost driven the drug 'pedler' out of the community, as the 'pedler's' rates are extremely high, but follow

ing recent prosecutions in Boston against certain physicians and druggists, the 'pedler' has reappeared and is doing business.

"The habitual user of morphine and other narcotic drugs should not be regarded as a chronic incurable. He can be cured. His cure, however, requires special treatment and necessary conditions not available to the general practitioner. There can be no honest drug habit cure or treatment that permits the drug victim to administer the drug to himself.

"The delivery of narcotics to an addict in course of a so-called 'reducing treatment' is but a transparent pretext and merely perpetuates the drug evil and places in circulation large quantities of dangerous habit-forming drugs. The physician in charge of one of the largest prisons in this country informed the commission that the institution has used less than one drachm of morphine sulphate during the past two years, and the largest dose administered at any time did not exceed one-sixth of a grain."

On the basis of these and other findings the Commission concludes that the present drug laws are insufficient and should be strengthened in regard to the following respects:

"1. They are not easily understood and capable of misinterpretation. The words 'obviously needed for therapeutic purposes' should be further defined.

"2. Enforcement of the laws should be made more certain by the adoption of simplified pleading forms.

"3. The penalties for violations of the law are inadequate and should be increased, and new offences defined.

"4. Places resorted to by drug addicts should be declared and treated as common nuisances and the police authorities should be given the right to arrest without warrant in certain cases.

"5. The hypodermic syringe and needle should be kept from the addict and the sale of these instruments regulated.

"6. The Boards of Registration in Medicine, Dentistry, Pharmacy and Veterinary Medicine should be given broader powers to cancel and revoke registrations and licenses.

"7. The sale and distribution of narcotic drugs by wholesale and retail druggists should be further restricted.

"8. The State Department of Health should be empowered to make rules and regulations for the distribution of narcotic drugs through druggists.

"9. Private hospitals and sanatoria should be specially licensed and subject to rigid inspection.

"10. Provision should be made for institutional treatment and care of non-criminal addicts.

"11. Additional provision should be made for the collection of statistics as to the extent of the use of narcotic drugs in the Commonwealth."

The Commission disclaims any desire to interfere in a meddlesome manner with the legitimate practice of medicine by the recommendation of unreasonably drastic laws.

"It is not the intention of the commission to recommend any interference with the honest and legitimate practice of medicine. The physician's honest professional judgment should be his sole guide in the treatment of patients. Likewise, the right of the physician to administer any remedies which he believes necessary to prevent, cure or alleviate diseases and suffering should be free from unnecessary restraint."

It does, however, advocate giving greater powers to the State Department of Health and the various state boards of registration and urges the establishment of a state institution for the treatment of non-criminal addicts.

"The commission believes that the act of 1915 should be so amended as to require drug prescriptions to bear on their face the full name of the pharmacist who fills them; also a receipt signed by the person who receives the drug; that the druggist shall verify the authority of the physician who issues the prescription; that the instructions for filling the prescription shall be followed in detail and without change; that no prescription shall be filled when more than five days old; and that the druggist shall affix to the container of the drug supplied on prescription a label that will identify it at all times.

"The commission recommends that the unlawful selling and delivery of narcotic drugs should be made a felony, and the penalties for other violations of narcotic drug laws should be substantially increased. It should be an offence for a druggist to fill a prescription for narcotics without using diligence to ascertain whether the signature of the physician is genuine. It should be an offence for physicians and druggists to have any mutual understanding as to sharing profits on drug prescriptions. It should be an offence to make any material false representation to a physician or druggist for the purpose of procuring a narcotic drug. Advertising of certain narcotic drug 'cures' should be prohibited."

There is much in the statistics, discussion and recommendations of this report that deserves thoughtful perusal by physicians and by the intelligent laity. Doubtless the seriousness of narcotic drug addiction is not nearly so great

as might be indicated by occasional articles in the sensational press; but that it is serious admits of no question and it should be the duty of the legitimate medical profession, strongly to support legislation which, in spite of its inconvenience, is necessary to reach and control those who are responsible for the prevalence of narcotic drug habits.

In this connection, attention may be called to a pamphlet recently issued by Mr. Charles B. Towns of New York on "Federal Responsibility in the Solution of the Habit-Forming Drug Problem." This pamphlet presents a proposed governmental solution of the habit-forming drug question considered in its medical, pharmacal and sociologic phases and with reference to its state, national and international aspects; and is written with a view to showing the inadequacy of existing laws on the subject and for the information of Congress and for the influencing of its action. In his report for 1915 the United States Commissioner of Internal Revenue has already made the following recommendations for an amendment or revision of the Harrison Narcotic Law.

"First.—A tax on the drugs specified, based upon some unit of weight, such tax to be denoted by stamps affixed to original packages or containers, and that the list of prescribed drugs be extended to include chloral-hydrate and cannabis indica, and other drugs having the same general properties, with a clear definition of 'substitutes' and 'synthetic substitutes' for such drugs.

"Second.—The repeal of Section 6.

"[This section reads: 'SECT. 6. That the provisions of this Act shall not be construed to apply to the sale, distribution, giving away, dispensing or possession of preparations and remedies which do not contain more than two grains of opium, or more than one-fourth of a grain of morphine, or more than one-eighth of a grain of heroin, or more than one grain of codeine, or any salt or derivative of any of them in one fluid ounce, or, if a solid or semi-solid preparation, in one avoirdupois ounce; or to liniments, ointments, or other preparations which are prepared for external use only, except liniments, ointments, and other preparations which contain cocaine or any of its salts or alpha or beta cocaine or any of their salts or any synthetic substitute for them: Provided, That such remedies and preparations are sold, distributed, given away, dispensed, or possessed as medicines and not for the purpose of evading the intentions and provisions of this Act. The pro-

visions of this Act shall not apply to decocted coca leaves or preparations made therefrom, or to other preparations of coca leaves which do not contain cocaine.']"

"Third.—That registration under this law shall be limited and restricted to persons lawfully entitled under state laws to dispense, prescribe, administer, or have in possession such drugs.

"Fourth.—That the writing of prescriptions, filling, keeping records, and the altering or forging thereof be definitely and fully covered by the law, with adequate provision for the punishment of the offences denounced therein, and providing that the tax imposed upon drugs shall not attach to prescriptions compounded from drugs once tax paid.

"Fifth.—That every person registered under the provisions of this law be required to keep record of all narcotic drugs purchased, received, dispensed, distributed, prescribed, or administered, and that collectors of internal revenue be authorized to require sworn statement covering such registered person's operation in these drugs for a given period.

Sixth.—That all of the general provisions of the internal-revenue statutes, including those relating to seizures and forfeitures, be extended to and made to apply to the drugs taxed and the persons upon whom special taxes are imposed under this law.

Seventh.—That some provision be made for the treatment, either by the Public Health Service or such other agency as may be designated, of indigent persons unfortunately addicted to the use of these drugs, where the operation of the law brings about conditions necessitating such treatment."

The solution of the problem suggested by Mr. Towns is based on a scheme of international as well as federal control and is so far-reaching that whatever its theoretical merits, its ultimate effective adoption must be a matter of years. Pending this possibility the local state regulation of narcotic drug addiction is obviously the immediate legislative and professional duty of the community.

TUBBING IN TYPHOID FEVER.

As a therapeutic measure of first importance, the tub bath has established a place for itself in the treatment of typhoid fever. Indeed, since its use typhoid fever has become a new disease,

so much so that by a great many it holds a place as a specific in the treatment of this very common infection. Since its almost universal use in the hospitals, one now rarely sees cases with marked delirium or with so much toxemia as to be lapsed into the so-called "typhoid state." While the tub bath reduces temperature, perhaps even better than other forms of hydrotherapy, that is not its function in the treatment of this disease, since, except in hyperpyrexia, temperature is the usual evidence of the reaction of the body to the infection. But the bath induces sleep better than any other measure, improves the quality of the pulse, and has a tendency to prevent or to reduce the amount of the always troublesome and dangerous tympanites. Tubbing is credited with saving from five to seven more patients to the hundred than without it.

On the other hand, this measure does not seem to have any effect to reduce complications. On the contrary, the tendency to hemorrhage and perforation is, if anything, increased. In justice, however, it must be said that this tendency is not due intrinsically to the bath treatment, but almost entirely to mishandling of the patient at a time when even ordinary palpation, unless done with the utmost gentleness, is dangerous. Plenty of trained attendants are absolutely essential to the proper carrying out of this valuable measure. Moreover it has been held that this measure carries with it an increased likelihood to relapses. Besides, it is not a measure that can be easily carried out under all circumstances. It requires a great deal of attention on the part of the medical attendants and a greater amount of perseverance if it is to be carried into effect with the proper frequency. It is a measure that cannot often be carried out in the home. And while it is true that if this remedy is of so much value that it forms the chief reason why all typhoid cases should be treated in the hospital, yet this convenience is not available in small communities, where typhoid seems to be more common.

The tub bath is a measure that is undoubtedly one against the toxemia, as is evidenced by the reduction of the incidence of delirium and the "typhoid state." Perhaps it would, then, be a safe rule to omit the measure where toxemia is not a marked feature of the infection, where there is danger of perforation or hemorrhage, or where plenty of trained attendants are not available.

NEW ENGLAND SURGICAL SOCIETY.

ATTENTION is directed to the publication in this issue of the first installment of the proceedings of the New England Surgical Society at its inaugural meeting in Boston last fall. In the issue of the JOURNAL for October 19, 1916 (Vol. CLXXV, p. 575) we commented editorially on the organization of this new society and presented a brief initial report of this meeting. The further material of this meeting will be published at approximately monthly intervals during the season and the proceedings of subsequent meetings will appear in similar manner annually in the JOURNAL, which is the official organ of the society.

THERAPEUTIC VALUE OF RADIUM.

THE letter by Dr. Blaisdell, published in another column of this issue of the JOURNAL, calls attention to a present tendency to belittle the therapeutic value of radium. This represents a perhaps natural but undesirable reaction. Merely because its therapeutic value was at first overestimated in certain quarters, is no reason now for its popular or professional neglect. Like all therapeutic measures its value should be studied, and its use availed of in the cases and circumstances under which it is properly indicated.

MEDICAL NOTES.

AWARD OF WELLCOME PRIZES.—Report from Washington on January 5 states that the Association of Military Surgeons of the United States has announced as follows the results of the Henry S. Wellcome prize competition:

"Capt. Manlon Ashford of the Army Medical Corps, who wrote on 'The most practicable plan for the organization, training and utilization of the medical officers of the Medical Reserve Corps of the United States Army and Navy, and of the medical officers of the Reserve Corps of the United States Army in peace and war,' got a gold medal and \$300.

"First Lieut. Henry C. Coe of the Medical Reserve Corps of New York City, received honorable mention for the prize, and was awarded life membership in the Association.

"A silver medal and \$200 was awarded to Asst. Surg.-Gen. W. C. Rucker of the Public Health Service, whose essay was entitled, 'The influence of the European War on the transmission of the infections of disease, with special reference to its effect upon disease conditions of the United States.'

"Passed Assistant Surgeon J. R. Hurley, of

the Public Health Service, received honorable mention for the prize, and a life membership in the Association.

"The prizes, which were given by Henry S. Wellcome, an American living in London, are annually competed for by officers of the Army, Navy, Public Health Service, the National Guard and the Officers' Reserve Corps of both the Army and the Navy."

RELATIVE VALUES IN PUBLIC HEALTH WORK.—A recent publication of the Russell Sage Foundation gives a series of percentages of preventable deaths. These have been compiled by Franz Schneider, Jr., and entitled "Relative Values in Public Health Work." He estimates that 150,000 deaths occur in this country annually from diseases which might have been prevented. To tuberculosis he gives a total of 37½%, infantile diarrhea, 20%, bronchopneumonia 14%, common children's diseases 12.6%, typhoid fever 3.7%, and various other infections 11.2%. Perhaps the most significant figure is the high percentage of deaths from common diseases of children. Preventive work in this direction has been slow and difficult in the face of the common belief that it is better for children to catch these diseases than to try to keep away from them. Inasmuch as diphtheria and croup as causes of mortality take a higher toll in lives by nearly half than typhoid, and measles falls only about one-third below the typhoid rate, there is much opportunity for general education in the unnecessary danger of allowing children to "take everything." Because they are so common, they are not feared, and it is interesting to compare their mortality rates with those rarer diseases which are so generally dreaded and avoided. Among 150,000 deaths in 1913 from infectious diseases, leprosy caused only three, hookworm had 10, anthrax caused 12 deaths and rabies caused 67 deaths. Of course there is to be taken into consideration the incapacitating nature of such diseases as hookworm, which is out of proportion to its deadliness.

MENTAL HYGIENE.—It is announced that a new publication, to be entitled *Mental Hygiene*, will be undertaken in January, 1917, to be issued as a quarterly magazine by the National Committee for Mental Hygiene and edited by Dr. Frankwood E. Williams.

Mental Hygiene will present to a wide circle of readers, in as non-technical a way as possible, problems in all articles on the practical management of mental relations of life. Today, as never before, attention is being directed to mental factors in the problems of the individual and of society. These factors are of paramount importance in the study and practical management of delinquency, crime and inebriety. We no longer ignore the fact that education must meet the needs of children who present special difficulties of adapta-

tion. The widespread determination to control feeble-mindedness raises questions of economics, law, and medicine which demand the most thoughtful consideration. New ideals in the care and treatment of those suffering from mental disorders are imposing new obligations upon the public authorities. The recognition of preventable causes of mental diseases challenge us to seek in the field of mental hygiene victories comparable to those achieved in general hygiene and sanitation.

Mental Hygiene will bring dependable information and a new inspiration to everyone whose interest or whose work brings him into contact with problems of this kind. No other periodical exists for the express purpose of serving these ends. Of interest to all thoughtful readers, to physicians, lawyers, educators, clergymen, public officials, and students of social problems, the magazine should prove of especial value.

LONGEVITY OF AMERICAN PRESIDENTS.—In a recent issue of the *London Lancet* is published the following item of comment on the longevity of American presidents and the commonly accepted diagnoses of their causes of death. This is of interest in comparison with the longevity and causes of death among any series of monarchs belonging to a European dynasty of comparable duration:

"The longevity of the Presidents of the United States is remarkable. Their ages at death were as follows: 67, 90, 83, 85, 73, 70, 78, 79, 68, 71, 53, 65, 74, 64, 77, 56, 66, 63, 70, 49, 56, 71, 67 and 58 years. Those at 56, 49 and 58, were, respectively, Lincoln, Garfield and McKinley, who were assassinated. The ages of these 24 men totalize 1663 years, or an average of 69 years each, showing, as is believed, that the stress and responsibility of leadership seems to have no effect on longevity.

The following causes of death are those popularly accepted: Washington, pneumonia (more correct accounts state edematous affection of the windpipe, or membranous croup); J. Adams, debility; Jefferson, chronic diarrhea; Madison, debility; Monroe, debility; J. Q. Adams, paralysis; Jackson, consumption and dropsy; Van Buren, asthmatic catarrh; Harrison, bilious pleurisy; Tyler, bilious attack (with bronchitis); Polk, chronic diarrhea; Taylor, cholera morbus and typhoid fever; Fillmore, debility; Pierce, dropsy and inflammation of stomach; Buchanan, rheumatic gout; Lincoln, bullet wound; Johnson, paralysis; Grant, cancer of the tongue and throat; Hayes, paralysis of the heart; Garfield, bullet wound; Arthur, Bright's disease, paralysis and apoplexy; Cleveland, debility; Harrison, pneumonia; McKinley, bullet wound."

POPULATION OF UNITED STATES.—On December 21 the United States Census Bureau issued estimated statistics of the present population of

the United States and its principal cities, based on the rates of population increase from 1900 to 1910. These figures indicate that approximately 41% of the nation's inhabitants now live in cities of over 8,000 population, as against approximately 39% in 1910. This shift of population, following a tendency long noted in more highly civilized countries, is significant on account of the many factors of life in populous cities affecting the health and social and economic status of the inhabitants:

"The entire population of continental United States for 1916 has already been estimated at 102,017,312. The total in the States, Territories and United States possessions is put at 112,444,620.

Ten States have taken censuses since the last Federal census in 1910 and seven show population increases. Kansas, South Dakota and Wyoming decreased from 1910 to 1915, the greatest reduction being in Wyoming, 2.9 per cent. The least increase was in Iowa with a growth of but 6 per cent. The greatest increase was 22.5 per cent. in Florida. In Florida, Iowa and Massachusetts the percentage of increase from 1905 to 1915 was greater than from 1900 to 1910, but in the other seven States it was much higher from 1900 to 1910 than from 1905 to 1915. In Kansas, North and South Dakota and Wyoming the rate of growth from 1900 to 1910 was nearly double that from 1905 to 1915.

In Iowa a decrease of 7082 was shown from 1900 to 1910, and an increase of 148,016 from 1905 to 1915. In New Jersey, New York and Rhode Island slight decreases were indicated by the State returns of 1905 and 1915, as compared with the increase from 1900 to 1910.

In the past six years the growth in the white population was 10,000,000, and of the negro population about three-fourths of a million.

The populations of some leading cities as estimated today are: New York, 5,602,841; Chicago, 2,497,722; Philadelphia, 1,709,518; St. Louis, 757,309; Boston, 756,476; Cleveland, 674,073; Baltimore, 589,621; Pittsburg, 579,090; Detroit, 571,784; Los Angeles, 503,812; Buffalo, 468,558; San Francisco, 463,516; Milwaukee, 436,535; Cincinnati, 410,476; Newark, 408,894; New Orleans, 371,747; Washington, 363,980; Minneapolis, 363,454; Seattle, 348,639; Jersey City, 306,345; Kansas City, 297,847; Portland, Oregon, 295,463; Indianapolis, 271,708; Denver, 260,800; Rochester, 256,417; Providence, 254,960; St. Paul, 247,232; Louisville, 238,910; Columbus, 214,878; Oakland, 191,604; Toledo, 191,554; Atlanta, 190,558; Birmingham, 181,762; Omaha, 165,470; Worcester, 163,314; Richmond, 156,687.

Census officials were careful to explain that these estimates do not take into consideration local conditions and that they are based solely on the rate of the population increase or decrease in the past."

THE CRIMINAL DELINQUENT.—Of especial interest to social workers and those interested in the criminal delinquent is the recently published Eighth and Ninth Annual Reports of the Municipal Court of Chicago, which cover the years from December 1, 1913, to December 5, 1915. Since the publication of its previous report there has been established in conjunction with the court the Psychopathic Laboratory to which are referred by judges of the Boys' Morals, Domestic Relations and Criminal Branch Courts all defendants, and sometimes witnesses, who are suspected of being insane, feeble-minded, or afflicted with other mental ailments. The duties and functions of this Laboratory and its objects in existing are discussed under such topics as "The Problem of the Repeater," "Variety of Tests Employed," "What Shall Be Done With Them," "Scope of the Laboratory and the Training and Qualifications of Directing Experts," "Varied Demands Made" and "Staff That Is Needed." The follows a summary by Dr. William J. Hickson, director of the Laboratory, since May 1, 1914, of his findings in his work in the Boys' Court and the Domestic Relations Court.

CENTRAL STATE HOSPITAL, PETERSBURG, VA.—The recently published forty-sixth annual report of the Central State Hospital of Virginia states that during the year applications were made for the admission of 614 patients, all of whom, except thirty-eight, were admitted to the hospital. Of this number 153 were suffering from manic-depressive insanity; dementia-præcox, 101; senile dementia, 88; exhaustion-infection psychosis, 83; epilepsy with either dementia or other mental disorder 32; feeble-mindedness usually with periods of mental excitement, 21; undetermined or not insane, 12. The increase in number of admissions for the year was thirty. The admissions to a state hospital for for the insane usually varies from 20% to 33% of the total resident population; in this institution last year it reached a maximum of one-third.

EUROPEAN WAR NOTE.

WAR RELIEF FUNDS.—On Jan. 20 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$242,304.38
French Wounded Fund	185,677.05
Armenian Fund	139,828.52
French Orphanage Fund	76,082.94
Polish Fund	59,926.33
Russian Fund	7,418.79
Irish Fund	2,663.78

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Jan. 20, 1917, the number of deaths reported was 294, against 330 for the same period last year, with a rate of 19.85, against 22.63 last year. There were 33 deaths under one

year of age, against 37 last year, and 131 deaths over 60 years of age, against 118 last year.

The number of cases of principal diseases were: diphtheria, 73; scarlet fever, 44; measles, 109; whooping cough, 2; typhoid fever, 1; tuberculosis, 41.

Included in the above were the following cases of non-residents: diphtheria, 29; scarlet fever, 18; measles, 1; tuberculosis, 1.

Total deaths from these diseases were: diphtheria, 3; tuberculosis, 24.

Included in the above were the following deaths of non-residents: tuberculosis, 1; diphtheria, 1.

TRAINING SCHOOL FOR NURSES, MASSACHUSETTS GENERAL HOSPITAL.—The graduating exercises of the Training School for Nurses of the Massachusetts General Hospital were held on January 11, 1917, in the new Moseley Memorial Building. Dr. Hugh Cabot made an address on "American Nurses and the Great War."

Massachusetts Medical Society.

COMMITTEE ON WORKMEN'S COMPENSATION ACT.

The Committee on Workmen's Compensation Act has held numerous meetings since the middle of October, and has considered many wordings of the amendment to be offered to the Workmen's Compensation Act.

The first consideration by the committee of each was that the new wording must make a definite improvement in the Act, not only for the physicians, but for all concerned in it.

The following was selected as the Amendment to be offered after several conferences between our committee and the parent Committee on State and National Legislation, and has been introduced into the Senate as Senate Bill 135:

"During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the Board, for a longer period, the Association shall furnish *adequate and reasonable medical and hospital services and medicines* when they are needed. *The employee shall have the right to select a physician other than the one provided by the Association, and in the event that he shall be treated by a physician of his own selection, or, where, in cases of emergency, or for other justifiable cause, a physician other than the one provided by the Association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the Association, subject to the approval of the Industrial Accident Board.* Such approval shall be granted only after the Board finds that the employee was so treated by such, or that there was such justifiable cause, and, in all cases, that *the services were adequate and the charges reasonable.*"

Much of the work of the committee cannot be published at this time, but the committee wishes to assure the members of the Medical Societies that no stone is being left unturned in the prosecution of our work. Weekly conferences are the rule. Reports from individual doctors will be of great value to the committee, but to be of any value, must be made at once.

The Committee wishes to remind the members of Auxiliary Committees and of the District Societies that we must be prepared to face opposition, and the better we are prepared, the less that opposition will certainly be.

Preparedness can come only by prompt response to the calls made on individuals for information.

At all the meetings, enthusiasm for a better Act and better conditions has been pronounced, and we are now on the last legs of our race. Senate Bill 135 is equitable and just, and deserves the most active support of every physician in Massachusetts.

JOSEPH A. MEHAN, *Secretary.*

YOUNG INDUSTRIAL HEALTH INSURANCE BILL.

The text of the Young Industrial Health Insurance Bill, which has been introduced into the Massachusetts General Court as a substitute for the Doten Bill, will be published, with editorial comment, in the next issue of the JOURNAL.

Correspondence.

THE THERAPEUTIC VALUE OF RADIUM.

Massachusetts General Hospital,
Boston, Jan. 5, 1917.

Mr. Editor:

The Associated Press has recently furnished to its subscribers, which are the majority of daily newspapers in this country, an article on radium based on an interpretation of the report of the Crocker Cancer Commission of Columbia University. In this article, radium is stated to be worthless as a cure in cancer and the inference that the average layman is drawing can hardly be other than that its continued use after such findings by any medical man, not only would be of distinct harm to the patient, but also would border on charity on a financial viewpoint.

The following editorial from the Boston Herald may be taken as typical of the impression created by this item:

"THE CANCER SCOURGE.

"One by one during the past dozen years, the so-called cancer remedies have been tried and found wanting, and now radium, the most promising of them, takes its place among the discarded 'cures.' An elaborate investigation by the Crocker Cancer Research Fund of Columbia University has just culminated in the discovery that while radium is successful as a palliative in cases on which operation is impossible, it not only does not effect a cure, but may act as a stimulant on the disease. Reporting for the Fund, Dr. Francis Carter Wood admits that by the use of large quantities of radium it has been possible in a few instances to prolong life and render the patients more comfortable. But he is also careful to point out that, when used in small quantities, radium often results in a rapid extension of the tumor, so

that the patient's condition is worse than if he had been left alone."

As a result of the dissemination of these particularly incorrect statements, many patients in private and hospital practice have been appealing to their physicians in genuine concern over their own condition and in regard to the advisability of continuing this form of treatment. Another feature of the harm done is illustrated by the case of a man who declined this week to contribute toward the purchase of radium for a large hospital in this city, with the remark: "I saw in the paper the other day that radium was no good and wouldn't be used any more."

In view of the widespread distribution of these false reports and the incalculable harm that may result both to patients and to the medical profession, it seems to me that a determined effort should be made to counteract their pernicious influence by setting forth emphatically the real status of radium—to the profession, in the medical publications; and to the layman through the newspapers. Leaving aside for the moment the variety of opinion over its ability to "cure" all forms of systemic malignant disease, radium is today a remedy which is the equal, if not the superior, of any other in the treatment of precancerous and cancerous lesions of the skin. It is with the idea of emphasizing this point that the following communication was sent to the *Boston Herald*, and subsequently published.

"To the Editor of the *Herald*:

"Newspaper interpretation of medical subjects, vital to the interests and health of the community, should be peculiarly conservative and well advised. To me your editorial comments on radium in cancer on Wednesday morning of this week seem especially open to criticism on this score.

"Briefly stated, your summing up of the findings of the Crocker Cancer Commission of Columbia University unqualifiedly placed radium in the discard as a 'cure,' damned it with faint praise as a palliative, and noted with the cheerful abandon of *Life* opportunity given the medical profession to make 'the patient's condition worse than if he had been left alone.' Such is the pessimistic side of the picture based on truth but, unfortunately for your readers, only half the truth. Simply because radium cannot act as a 'cure' in inoperable or hopeless cases of systemic cancer is no reason why your readers should be instructed to regard it as a discarded fad, to the utter disregard of countless cases of early malignant disease that this remedy has saved.

"Point out rather to your readers the significance of the recent purchase of many thousand dollars' worth of radium by the Huntington Hospital of this city as an example of how useful it is in experienced hands. Tell them of its curative effects beyond that of any other remedy in epitheliomata or cancers of the skin. Lay your emphasis on how radium can absolutely prevent cancers of the skin if people could be taught to have the early pre-cancerous possibilities, such as keratoses, warts, moles, etc., removed before degeneration starts. By such statements it seems to me you would be doing the greater service to the community and more rightly interpreting the findings of the Crocker Cancer Commission on radium."

J. HARPER BLAISDELL, M.D.

IS THERE A HYPHEN IN THE NAME OF DR. ARGYLL ROBERTSON?

Boston Medical Library, 8 The Fenway, Boston.
December 22, 1916.

Mr. Editor:

In looking over medical references and text books, I find a rather general impression that there is a hy-

phen between Argyll and Robertson in the name of the Scottish physician, Dr. D. Argyll Robertson, for whom the Argyll Robertson pupil symptom was named.

A certain similarity to such combinations of names as Klebs-Loeffler or Caldwell-Luc and many others has apparently given rise to the idea that Argyll and Robertson were two different persons. In fact, in a recent well-known trial for criminal insanity, one of the expert witnesses, who had been testifying as to the presence of the Argyll Robertson symptom in the prisoner, was asked by the opposing counsel, as a sort of catch question, whether Argyll and Robertson were two persons or one. The witness was unable to answer this, much to his mortification.

The Boston Medical Library is fortunate in having in its possession an autograph letter from Dr. Robertson signed by him most legibly and leaving no doubt that he was one person and not two and that he used no hyphen.

With kind regards
yours very truly
D. Argyll Robertson

The accompanying facsimile shows the name as it was written by him in 1879, and I hope it may prove useful to those who have not been quite clear in their minds as to the presence or absence of a hyphen.

JOHN W. FARLOW, M.D.

THE BLOSSOM STREET HEALTH UNIT.

Instructive District Nursing Association.

561 Massachusetts Avenue, Boston.

January 15, 1917.

Mr. Editor:

In the issue of your JOURNAL for JANUARY 11, on page 73, appears a short paragraph speaking of the success of the Municipal Health Unit on Blossom Street.

The Instructive District Nursing Association, one of the societies which most heartily entered into the plan for the Unit, and has worked there loyally since its beginning, feels that it must register a protest against your statement because it considers that, for the lack of adequate supervision, the Health Unit has failed in the chief object of such an undertaking—i. e., the co-ordination of all the agencies working for public health in the district.

"Success" of a health centre means a greater measure of success than could attend the working of any one agency by itself, and this cannot be attained by merely gathering the agencies under one roof. A thoroughly well educated nurse, with training in social work, must be at hand constantly, so to plan the activities of the center that the people under its care are referred at once to the appropriate workers and that duplication is avoided.

No supervision of this sort is to be found at Blossom Street, but we sincerely hope that should new Health units be established the Board of Health will recognize its prime importance.

Yours truly,
ELLEN HALE, Secretary.

Miscellany.

NOTICE.

ASTLEY COOPER PRIZE.

The next triennial prize of three hundred pounds, under the will of the late Sir Astley Cooper, Bart., will be awarded to the author of the best essay or

treatise on "Gunshot Wounds of the Lungs and Pleura."

The conditions annexed by the Testator are: "That the Essays or Treatises to be written for such Prize shall contain *original experiments and observations*, which shall *not have been previously published*; and that each Essay or Treatise shall (as far as the subject shall admit of) be *illustrated by preparations and drawings*, which preparations and drawings shall be added to the Museum of Guy's Hospital, and shall, together with the Work itself and the sole and exclusive interest therein and the copyright thereof, become henceforth the property of that Institution, and shall be relinquished and transferred as such by the successful candidate."

And it is expressly declared in the will "that no Physician or Surgeon, or other officer for the time being of Guy's Hospital or of St. Thomas's Hospital, in the Borough of Southwark, nor any person related by blood or affinity to any such Physician or Surgeon for the time being, or to any other officer for the time being in either of the said Hospitals, shall at any time receive or be entitled to claim the Prize."

The Prize cannot be awarded to any Essay which is the joint production of two or more authors; nor can it be awarded to any member of the Hospital or School Staff of either Guy's or St. Thomas's Hospital; but with the exceptions here referred to, this Prize is open for competition to the whole world. No essay will be eligible for the Prize unless it complies with all the conditions given above.

Candidates are informed that their Essays, either legibly written or type-written in the English Language, or, if in a Foreign Language, accompanied by an English translation, must be sent to Guy's Hospital, on or before January 1st, 1919, addressed to the Physicians and Surgeons of Guy's Hospital, London, S.E.

Each Essay or Treatise must be distinguished by a Motto, and accompanied by a sealed envelope containing the Name and Address of the Writer. None of the envelopes will be opened except that which accompanies the successful Treatise. The Trustees will entertain the question of the publication of the successful Essay in the following number of the Guy's Hospital Reports. This will not of itself preclude the successful competitor from publishing his Essay elsewhere upon obtaining permission.

The unsuccessful Essays or Treatises, with the illustrative preparations and drawings will remain at the Museum of Guy's Hospital until claimed by the respective writers or their agents.

C. H. FAGGE, M.S.,
Hon. Sec., Guy's Hospital.

SOCIETY NOTICES.

THE BOSTON CITY HOSPITAL.—The Boston City Hospital Medical Meeting to be held in the surgical amphitheatre, Thursday, Jan. 25, 1917, at 8.15 o'clock P.M., will discuss "The Eye, Ear, Nose and Throat in Relation to General Diseases." "The Eye," Dr. J. C. Bossidy; "The Ear," Dr. E. M. Holmes; "The Nose and Throat," Dr. C. R. C. Borden. Physicians and medical students are invited to attend. Hospital telephone, B. B. 7400.

NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at Masonic Temple, 171 Warren street, Roxbury, Tuesday, January 30, at 8 P.M. sharp. Telephone Roxbury 22753.

Business.

Communication: Some Problems of Surgery, J. E. Sweet, M.D., Director of Laboratory of Surgical Research, University of Pennsylvania.

Discussion by John T. Bottomley, M.D.

Refreshments after the meeting.

BRADFORD KENT, M.D., Secretary.

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY.—The Middlesex North District Medical Society will hold its quarterly meeting on Wednesday, January 31, in the New American Hotel, Lowell. Dinner will be served at 6 P.M. Reservations for seats must be made before January 27.

Business meeting will follow dinner, at which there will be an open discussion of present phase of Industrial Accident and Health Insurance. Dr. Samuel B. Woodward, President of the Massachusetts Medical Society, is to be at the meeting, and every Fellow of Middlesex North should be present to welcome him.

The paper of the evening, illustrated by stereopticon, will be read by Dr. Frederick H. Morse of Boston, the subject being: "The Management of Non-Surgical Cases of Chronic Intestinal Stasis."

A full attendance at this meeting is urged.

JOSEPH A. MEHAN, M.D., Secretary.

MEDICAL MEETING at the Peter Bent Brigham Hospital, Tuesday, Jan. 30, 1917, at 8.15 P.M. Assistant Surgeon General W. C. Rucker of the United States Public Health Service will speak. Subject: "The Origin and Development of the Public Health Service" (with stereopticon).

All physicians cordially invited.

D. C. HALLER, M.D., Secretary.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The annual meeting of the Society will be held in Sprague Hall, Medical Library Building, on Monday, Jan. 29, 1917, at 8.15 P.M.

Memorial addresses: Dr. Edward M. Buckingham, by Dr. George W. Gay; Dr. Walter J. Dodd, by Dr. Charles A. Porter and Dr. Roger I. Lee.

The annual business meeting will be held at 9 P.M.

HERMAN F. VICKERY, M.D., President,
GEORGE GILBERT SMITH, M.D., Secretary.

RESIGNATIONS AND APPOINTMENTS.

The resignation is announced of Dr. ORAN G. CILLEY as physician to Charles Street Jail, Boston. Dr. Cilley was appointed to this position in 1912. He is succeeded in office by Dr. H. H. Colburn, Boston.

Dr. WALTER H. BROWN has resigned as epidemiologist of the Massachusetts State Department of Health to become head of the Bridgeport Health Department.

Dr. STANLEY H. OSBORN has resigned as district health officer in Berkshire District to become epidemiologist of the State Department of Health. His former position will be filled by Dr. Howard A. Streeter of Marblehead, Mass.

RECENT DEATHS.

STEPHEN AGUSTUS PEDRICK, M.D., died at his home in Rowley, Mass., January 11, aged 45 years. The son of Richard and Clarissa Ober Pedrick, he was born at Beverly, November 12, 1871; was educated at the Beverly schools and at Dartmouth College, and at the Tufts College Medical School, where he received his M.D. in 1895. He joined the Massachusetts Medical Society in that year and settled in practice in Rowley. He was a member of the Essex North District Medical Society and the Newburyport Medical Club. His widow, Lowando Dresser Pedrick, and a son and daughter survive him.

OZIAS M. GEORGE, D.M.D., Bellow's Falls, Vt., died in that town on January 7, of pneumonia. Dr. George was born in 1842, and moved to Bellow's Falls in 1865 where he began the practice of dentistry. In 1870 he was elected bailiff and served in that capacity or as trustee until a few years ago. He leaves a widow, a son and a daughter.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

February 1, 1917

BOSTON SURGICAL SOCIETY		NEW INSTRUMENT	
DIVISION OF THE URETER IN PELVIC OPERATIONS. <i>By William P. Graves, M.D., Boston.</i>	149	AN IMPROVED VENIPUNCTURE NEEDLE. <i>By Guy G. Fernald, M.D., Concord, Mass.</i>	173
FRACTURES OF THE EXTERNAL CONDYLE OF THE HUMERUS IN CHILDHOOD, WITH ROTATION OF THE CONDYLAR FRAGMENT. <i>By James S. Stone, M.D., F.A.C.S., Boston.</i>	151	EDITORIALS	
THE APPLICATION OF THE MEDIAN PATELLA INCISION FOR A KNEE ARTHIROTOMY. <i>By E. G. Brackett, M.D., Boston.</i>	153	THE MEDICAL PROVISIONS OF THE YOUNG BILL.	174
THE MANAGEMENT OF OPERATIVE CASES PRESENTING URINARY BACK PRESSURE. <i>By Arthur L. Chute, M.D., Boston.</i>	155	CHICAGO CONFERENCE ON MEDICAL EDUCATION.	175
ACUTE AND SUBACUTE PERFORATIONS OF THE STOMACH AND DUODENUM AT THE MASSACHUSETTS GENERAL HOSPITAL. <i>By Edward P. Richardson, M.D., F.A.C.S., Boston.</i>	158	THE ELIMINATION OF THE RAT.	176
ORIGINAL ARTICLE		MEDICAL NOTES.	176
APPENDICITIS. <i>By Torr Wagner Harmer, M.D., Boston.</i>	165	OBITUARY	
CLINICAL DEPARTMENT		EDWARD MARSHALL BUCKINGHAM, M.D.	177
A LABORATORY AID IN THE DIAGNOSIS OF SCARLET FEVER. <i>By D. M. Lewis, M.D., New Haven, Conn.</i>	170	MEMORIAL RESOLUTIONS	
CANCER OCCURRING IN ACID PARTS OF THE BODY. <i>By A. L. Benedict, A.M., M.D., Buffalo.</i>	172	MEMORIAL RESOLUTIONS FOR DR. KEANT.	177
		MISCELLANY	
		BUBONIC PLAGUE IN BOSTON.	177
		DECLINE OF POPULATION IN FRANCE.	178
		THE YOUNG INDUSTRIAL HEALTH INSURANCE BILL.	179
		CORRESPONDENCE	
		THE ANTI-VACCINATION CAMPAIGN. <i>Samuel B. Woodward, M.D.</i>	186

Boston Surgical Society.

DIVISION OF THE URETER IN PELVIC OPERATIONS.*

BY WILLIAM P. GRAVES, M.D., BOSTON.

Dr. Scudder has asked me to report in greater detail the cases of division of the ureter that I mentioned in the clinical meeting last month at the Free Hospital for Women.

CASE 1. Operation October 31, 1907. The patient was a married woman of 45. The operation was for an immense fibro-adenocystoma of the uterus, which completely filled the abdomen. The tumor was densely adherent, as these rare tumors practically always are. The urine before operation was normal. The tumor was freed on the right side, the ureter being exposed along most of its course and not injured. The ureter on the left was found to enter the tumor at a point about an inch above the brim of the pelvis. On account of the length and severity of operation, it was thought best not to attempt to dissect the ureter from its bed in the tumor. The ureter was, therefore, deliberately cut above the brim of the pelvis, and again at a point near its entrance into the bladder. Inasmuch as the right kidney felt normal and the right ureter was intact, the proximal stump of the cut ureter was tied with strong silk about an inch from the end. The cut end was then sewed over with catgut. The proximal stump next to the bladder was tied with catgut. The patient made a good recovery from the operation, but had complete anuria for 36 hours. She was treated with hot packs, nitre and pilocarpin. At the end of 36 hours she began to pass urine and excreted 31 ounces in the following 24

hours. From that time she made an uninterrupted convalescence. There was no pain or tenderness of the left kidney and no apparent hydronephrosis. The opposite kidney, however, underwent a very marked compensatory hypertrophy which was noted within a few days after the operation. The patient was followed for several years, and remained in perfect health. The right kidney continued to be hypertrophied.

CASE 2. Operation October 31, 1907. The patient was a single woman of 27. The operation was for a large cervical fibroid which was tightly packed in the pelvis, extending principally into the right, broad ligament. In cutting the right uterine vessels the right ureter, which was displaced from its normal position, was completely severed. After removal of the fibroid uterus by a complete hysterectomy, the left kidney and ureter were inspected and found to be intact. The injury to the right ureter was too high to allow for convenient implantation in the bladder, so that the only alternatives were anastomosis or tying of the ureter. On account of the recent experience from the preceding case, in which the patient had had anuria for 36 hours, it was decided to perform an anastomosis. An end-to-end anastomosis of the severed ureter was performed in the classical way (illustration on black-board). The patient passed 11 ounces of urine during the 12 hours following operation, and continued to pass a normal amount thereafter. Nine days after the operation bladder symptoms appeared with rise of temperature, malaise and pus in the urine. This attack, which was evidently a pyelitis, lasted two or three days, recurred 10 days later, and again recurred 10 days after that. Each attack of pyelitis was short in duration. After discharge from the hospital, the patient continued in excellent health, her case being followed for several years.

* Read before the Boston Surgical Society, January 10, 1917.

CASE 3. Patient was a single woman of 58. Operation, November 14, 1916. The operation was for a very large pseudo-mucinous cyst filling the abdomen and densely adherent. The worst adhesions were in relation to the right ureter, which could not be definitely distinguished. Great care was exercised to avoid cutting the ureter, but when the uterus was removed, it was found that the ureter was held within two clamps and almost completely severed. In this case the injury was sufficiently near to the bladder to allow for implantation, so that the operator had a choice of implantation, anastomosis or ligature. In considering the experience of the two former cases of cut ureter, it seemed that the patient in whom the ligature had been employed had made the better convalescence. In view of the fact that the patient had undergone a long and severe operation, and in view also of the favorable reports of ligature, especially from the Mayo Clinic, it was decided to tie the ureter. In this case three separate ligatures of No. 2 chromicized catgut were placed at about one inch apart in order to secure complete closure. The purpose of using several ligatures placed at a distance was to allow for a certain amount of necrosis of the ureteral epithelial lining with the formation of plastic adhesions. This patient made an uneventful recovery. There was no palpable hydronephrosis on the right side, nor was the compensatory hypertrophy of the opposite side sufficient to be detected by examination. There was no pain or tenderness of the kidney on the side of the ligated ureter.

CASE 4. In addition to the three personal cases which I have cited, I will add one from the service of one of my colleagues. The operation was for a large cervical fibroid, during the enucleation of which one of the ureters was cut. In this case the ureter was implanted into the bladder. Soon after the operation a urinary fistula appeared per vaginam. The fistula persisted for several months, after which the patient was lost sight of.

When a ureter has been accidentally cut, the surgeon usually has the choice of several procedures. Ligating the ureter has certain advantages over anastomosis and implantation. It requires very little expenditure of time, usually an important consideration, as the operations in which the ureter is cut are generally of great severity. If the end of the ureter is properly tied there is little danger of leakage and fistula.

According to Barney's statistics, hydronephrosis occurs in 80 per cent. but the hydronephrosis is as a rule not great and gradually subsides as the kidney atrophies.

If a dangerous hydronephrosis should occur the kidney may be removed at a later operation.

Anuria appears, according to Barney, in about 1.6 per cent. after ligation of one ureter. It is probable that ureteral anastomosis is more commonly followed by fistula and infection than is the ligature operation. It is evident from the literature that most of the cases of death following ligation of the ureter have been due to shock following some extremely severe operation, rather than to the closure of the ureter.

If the choice is between anastomosis and implantation I should personally prefer an anas-

tomosis. By anastomosis only one organ is injured. If a fistula or pyelonephritis ensues the kidney may be removed and the trouble cured by one operation.

If a fistula follows implantation in the bladder the surgeon then has to deal with two injured organs. The operation for reimplantation or closure of a ureterovesical fistula is, in my opinion, less satisfactory than a simple nephrectomy, such as might be necessitated by trouble from ligature or anastomosis.

If implantation is imperative, as might be the case in the presence of injury of the other ureter, or a functional deficiency or disease of the opposite kidney, the place of choice would be, of course, in the bladder, if the proximal end of the ureter is sufficiently long.

In case of emergency the ureter may be left to drain from the vagina or carried out through the skin.

Implantation into the intestine is not desirable on account of the almost inevitable ascending infection of the kidney.

Implantation into the appendix or of one ureter into the other, and even into the Fallopian tube, are operations that have been advocated from experiments on animals and on the cadaver, but probably have no very practical value.

DISCUSSION.

DR. WILLIAM L. ESTES, S. Bethlehem, Penn.: My experience in division of the ureter has been of a very limited order. I have done anastomosis in two cases, and tied off in one. One of the anastomoses did perfectly well, and one, I think, died, rather from shock of operation than severance of the ureter.

I should like to say in regard to the remark of Dr. Graves concerning infection of ureters implanted into the intestines, that I have done an implantation into the rectum for extrophy of the bladder in a child nine years ago, and the child is today doing very well.

DR. COBB: I have had four cases in which I divided, unintentionally, the ureter, three were carcinoma of the cervix and one a very large fibroid in a negroess. I did an anastomosis after the method just sketched by Dr. Graves; the first case died of shock largely due to the increased time taken by the anastomosis. One case of carcinoma recovered uneventfully and in two cases, one of carcinoma and one of fibroid, I had to do a nephrectomy four or five weeks after the operation.

DR. RUSHMORE: One of the major operations of gynecology has been described as tying four arteries and one ureter, and it has been said that one does not qualify as a gynecologist until one has actually cut across the ureter. However that may be, the subject of Dr. Graves' paper is of great interest and importance to everyone who does many pelvic operations.

I have had experience in three cases in which I cut the ureter. In one, in Baltimore, in which the operation was for a large myoma of the uterus, Dr. Kelly performed the anastomosis. The method was that just described by Dr. Graves: end-to-side. The patient did perfectly well.

The second case was operated on for carcinoma of the cervix with involvement of the ureter. I resected the ureter and implanted the proximal end into the bladder. The third was for carcinoma of the cervix. By accident I cut across the ureter, and then tied it. I think it would have been better to have left it alone because the patient was in such poor general condition and suffering from shock; to have left it alone would have given a little better chance.

One point in regard to the method of implantation into the bladder. I prefer some modification of the method suggested by Dr. Coffey. The incision is made first through the muscle, down to the mucosa, then the mucosa is punctured a short distance above the lower end of the incision. The ureter is best cut obliquely, not directly across, so as to give a sort of flap and that flap is drawn down into the bladder with a fine piece of catgut needled at both ends. The bladder wall is punctured by the needles from within outward and the ureter anchored by a suture, the knot of which lies outside the bladder. The bladder wall is then inclosed around the ureter and part of the muscle may be cut away to give less pressure.

The result is to approximate rather closely the valve-like opening that is naturally found between the ureter and the bladder.

In regard to results in these three cases, the first case did perfectly well. The case of carcinoma of the cervix in which the ureter was resected for about an inch and a half and implanted into the bladder, did perfectly well. A cystoscopic examination with catheterization of the ureter showed no evidence of disturbance of function. The third case died about thirty-six hours after the operation from shock.

In anastomosing ureter to ureter, a danger is the occurrence of a stricture, which predisposes to pyelitis.

DR. A. L. CHUTE: I cannot agree with Dr. Graves in the procedure of tying off a cut ureter without making an attempt to see whether the kidney cannot be saved. I feel that one should see whether something cannot be done in the way of a conservative operation, before tying off the ureter and destroying the kidney, as this means. If too much of the ureter has not been removed, it is perfectly possible to reimplant it into the bladder. I prefer this, if it can be done, rather than to make an anastomosis between the cut ends of the ureter.

I believe it is possible, if it be necessary, to free the ureter from its bed for at least one-half its length. This will allow bringing the ureter to the bladder comfortably in most cases. In women,—and of course all these cases occur in women,—the reimplantation is simpler than in men. I pass a number 10 or 12 ureter catheter to the bladder, make a small incision in the bladder wall at the place where I mean to implant the ureter and fish my catheter out through this incision. I then pass the catheter up the ureter for 5 to 8 cm., after which I introduce the ureter containing the catheter into the bladder for about a half inch, sew up my incision about my ureter, and catch the ureter to the

bladder wall at two or three points. There is little tendency to leakage in my experience, although I usually do carry a wick down to the point of suture. This procedure may be carried out rapidly. I have used it after resecting a tumor of the bladder involving the ureter, and in one case where the ureter had been injured during hysterectomy. I had an opportunity to see the latter case some months after operation, and found that she had a perfectly patent ureter, showing no particular contraction. Whether we can hope for this result in most cases or not, I do not know, but I feel we should make some effort to save the kidney in these instances where a ureter has been accidentally cut.

In all, I have seen four cases where the ureter has been tied off, severed, or wounded in doing hysterectomy. In the first case, which I saw a considerable time after operation, an abdominal urinary fistula had developed. A nephrectomy was done and the patient did well. In the second instance, both ureters had been tied off. I saw the patient about fifty-six hours after operation and did a double pyelostomy. The patient died some three days later. I have never been quite sure as to the cause of her death, since she was said to have passed a fair amount of urine following the double pyelostomy. I saw the third patient five weeks after operation. All the urine from the left side leaked through the vagina. This is the reimplantation that I have already referred to. The fourth case is one that I saw recently, and in this instance I believe the injury to the ureter was due to a needle prick. The amount of leakage has diminished; it looks to me as though this patient would require nothing in the way of operation, but that the injury would heal of itself.

DR. GRAVES: (Dr. Graves, in closing, spoke of the technic of implantation.) A very rapid method of implanting the ureter into the bladder is to split the proximal end of the ureter as one would a dandelion stem. The split end is then carried into an opening in the bladder by guide sutures. Two or three fine catgut sutures are used to make the joint more secure. (Illustrated on the blackboard.)

Another method of implantation, if the ureter is too short to reach the bladder, is that suggested by Albarran. A flap is turned up from the bladder and wrapped about the end of the ureter, the opening in the bladder being sewed up by a running suture. (Illustrated on the blackboard.)

In order to avoid stricture at the point of implantation Stoeckel suggests the following: Instead of making a slit in the bladder a round hole is cut about the end of a clamp which has been inserted through the urethra into the bladder cavity. The mucous membrane and peritoneum are sewed together before the ureter is implanted. (Illustrated on the blackboard.)

FRACTURES OF THE EXTERNAL CONDYLE OF THE HUMERUS IN CHILDHOOD, WITH ROTATION OF THE CONDYLAR FRAGMENT.*

BY JAMES S. STONE, M.D., F.A.C.S., BOSTON,
Surgeon to the Children's Hospital.

OPERATIVE intervention in fractures involving the elbow joint in children is ordinarily of very

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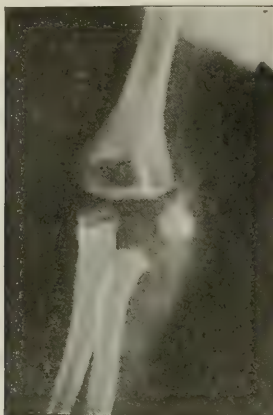


FIG. 1.—Illustration showing the typical rotation of the fragment.

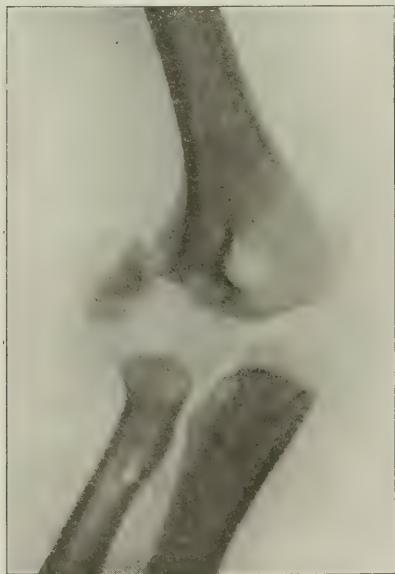


FIG. 2.—Illustration showing the callus growing from the fragment giving it a rounded outline. Periosteal callus growing from the shaft at the side. Slight callus growing from the fracture surface at the lower end of the shaft. X-ray taken two months after the injury.

doubtful benefit. There is, however, a perfectly definite type of fracture, or rather epiphyseal separation of the external condyle of the humerus, which practically invariably demands prompt open reposition of the fragment. The cases are those in which the epiphyseal fragment has become rotated in such a way that the slightly cup-shaped fracture surface faces out-

ward and usually slightly upward and backward. It can easily be felt just beneath the skin unless there is unusual swelling, and can be recognized readily by the clean cut edges and the slightly depressed centre. The rounded joint surface lies more or less in contact with the epiphyseal line or fracture surface of the shaft, or with the outer anterior surface of the bone just above the fracture surface. There is a space between the shaft of the humerus and the head of the radius, where the epiphyseal fragment normally belongs, which is filled with blood clot.

The periosteum is often torn off from the outer side of the shaft for a little distance upward, but may remain attached to the outer border of the rotated epiphyseal fragment. Under these conditions the torn-off periosteum may be more or less stretched across the fracture surface of the fragment. The displaced fragment may often be readily moved about, and may sometimes be pushed inward more or less into the gap from which it came, but in most instances it is impossible by manipulation to rotate the fragment back into place so that the fracture surfaces lie in contact. The fragment has rotated beyond a dead centre and is locked there.

What happens if it remains in its abnormal position? New bone grows down from the fracture surface of the lower end of the shaft toward the joint, more or less filling in the gap left by the displacement of the fragment. This callus growing downward comes in contact with the synovial surface of the rotated fragment. Thus bony union is unlikely. New bone also grows out from the fracture surface of the fragment, which, as already stated, is pointing outward and upward. The callus growing out in a sort of groping manner does not meet the shaft at all. It finds no solid bone to which it may unite the fragment. Some callus may grow from the separated periosteum at the outer side of the shaft, which may thus make a bone bridge to unite fragment and shaft, or the union between the two may remain fibrous. Under these conditions the fragment becomes a roughly rounded projecting mass, more or less firmly united to the shaft, and mechanically obstructing the free movement of the joint.

The treatment demanded early after one of these fractures has occurred, is open incision, exposure of the fragment, removal of the clot and any fibrous tissue which may occupy the space from which the fragment came, and then with a blunt dissector the prying of the fragment into place in its normal position. The procedure is simple, but the force needed to rotate the fragment back into place when everything is in sight, shows how useless are prolonged attempts at reduction by manipulation.

The open reduction should be done within the first few hours or else after a sufficient interval for the swelling and ecchymosis to have subsided.

It is possible to restore the fragment to its normal position even after an interval of two months, although such a delay is never advisable. In that time much new bone will have formed both below the fracture surface of the shaft and from the fracture surface of the fragment. But this new bone at first will be found to be very soft and easily wiped away with a curette. The cavity from which the fragment came and the fragment itself may be restored to their original shapes and placed in their normal relations.

After an interval of more than two months, however, it will be impossible to differentiate between the old bone and the new. Adaptive changes in the shapes of the bones will have occurred. The problem will no longer be one of restoring a displaced fragment to the place from which it came, but will be one of securing the best possible functional result under abnormal conditions. The treatment must, of course, be determined by the conditions in each case, but as a rule, the excision of the enlarged and useless fragment will give better results than any plastic bone repair.

The after-treatment of the early cases is simple. No suture of any sort need be put in the bone. Usually it is impossible to stitch the periosteum. There is no tendency to displacement once the fragment is replaced. Acute flexion locks the fragment in place. Stitches in the fascia and skin hold everything securely. These are usually inserted while the elbow is held flexed. It is much easier under these conditions to adjust the edges of the skin wound if the incision has been made L shaped rather than curved.

Acute flexion may be maintained for a fortnight. The arm may then be put in an internal angular splint and later in a sling. Normal motion is promptly restored unless prevented by meddlesome passive motion.

DISCUSSION.

DR. SCUDDER: I have seen two or three of these cases. One was some time after the injury, and another was a comparatively recent case. In one I excised the fragment, and in the other the fragment was put back in place. I found that the acutely flexed position, as Dr. Stone has suggested, is all that is necessary to keep the fragment in place.

THE APPLICATION OF THE MEDIAN PATELLA INCISION FOR A KNEE ARTHROTOMY.*

By E. G. BRACKETT, M.D., BOSTON.

Surgeon to Orthopedic Department, Massachusetts General Hospital.

THE median patella route of the knee joint is indicated in those conditions demanding an exploration of the anterior chamber of the joint, as well as the removal of definitely loose bodies,

not permanently located, for osteochondritis dissecans, and for the repair of crucial ligaments. It is an incision of considerable magnitude, but under proper precautions, and with the necessary care, it is a safe procedure, to be used when there is real reason for its use. It is not followed by a reaction proportionate to its apparent radicalism, as a rule, no more than in the usual arthrotomy. The operation is facilitated very considerably by the attention to a few details of technic, and since this route is comparatively new, it may be of value for those who have used it to some extent, to record their experience in regard to these details.

The incision must be long, particularly above, where it must extend to above the upper border of the lower third of the thigh, and below to beyond the tubercle of the tibia. Above, the incision should slant distinctly to the outside, to follow the line of direction of the tendon of the quadriceps. The dissection of the tissues overlying the tendons need be carried laterally only far enough to disclose the edges of both the quadriceps and patella tendons. This much is necessary to insure a median division of these tendons, which otherwise is not easy. The periosteum of the patella is cut through, but not retracted, and extended into but not through the quadriceps and patella tendons sufficiently to mark the line of incision. The patella is split by a saw cut, a little to the inside of the middle line, to leave the outside fragment a little larger than the inner, and to aid still further in this, the saw cut may be slanted inward, to make the under side of the outer fragment wider than the upper. This also gives firm apposition in closing, as the tension of the tendon crowds the overhanging inner fragment down on the outer. This is not easy except with a small and fine saw, and the tendons must be first split; otherwise they will be frayed by this procedure. Ordinarily the straight cut is sufficient and often better. The saw cut is most easily begun with the knee in the extended position, and when the groove is well made, completed with the knee flexed at 45° or more, in which position it is held firmly in place. The patella tendon can be divided by a single cut, but with the quadriceps it is necessary to divide it in layers, particularly in its upper part, as the fibers here are placed in a kind of spiral arrangement, the under fibers having a direction toward the inside, and the outer towards the outside, and this separation is carried on horizontally.

The alar ligaments and sub-patella fat pad are divided directly in the middle line, with the knee flexed, taking care to preserve the attachment of the ligamentum mucosum, which will usually be found on the inner half. By this median division, the fat pad, with its synovial covering, can be brought together again, and leaves no raw surface exposed to the inner surface of the joint. It frequently is necessary to detach the alar ligament and the pad from the middle of

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the anterior surface of the tibia, to which it is only lightly attached. For a good view of the crucial ligaments it is necessary, and particularly so to find and remove a cartilage. This is easily stitched back to the place of its old attachment and apparently does no harm. This is, however, not a good approach for cartilage, and is unnecessarily extensive.

Sterilized absorbent cotton wet in normal salt solution, is preferable for sponging, for all possible friction to the synovial membrane is to be avoided. The author has used silk for all parts of the closure. Nos. 6 to 8 for the synovial membrane, quadriceps pouch and both edges of the tendons. No. 14 for the patella suture—one on either edge, above and below, taking in a bit of the tendon, which gives a firm, strong hold; and one or two between, taking in the periosteum and expansion of the tendon of the quadriceps. It apparently is not necessary to sew through the patella to insure good apposition, for the tension of the tendon is sufficient to keep the fragments in firmly together. Fixation is not used, except by posterior Cotton splint, which keeps the knee from full extension, and gives sufficient protection, yet allows a little motion, which is desirable. When leaving the bed, the patient wears a split plaster, which is used during the time of being up for a month or six weeks,—passive motion is allowed from the first, and given after two weeks, but never to beyond the point of pain. Weight-bearing in the plaster is allowed in a month, and full normal use expected at the end of two months.

DISCUSSION.

DR. PAINTER: I think this operation has probably done more for joint surgery at the knee joint than almost any other innovation that has been introduced, certainly since the aseptic handling of the operative field.

The points that Dr. Brackett has made, I think, are particularly worth bearing in mind; particularly the point concerning the careful readjustment of the synovial membrane and the structures that have been divided, because it is the leaving of these in an unsatisfactory condition which is responsible for some of the discomfort and retardation in restoration of function after joint surgery. Of course, one of the things that militates against the interference with conditions in the joint has been the fear that motion could not be restored after major operations, and this method of approaching the joint has done away with this to a very considerable extent. I have not had the opportunity of doing this operation very many times, but it has seemed to me that one of the ways in which this may be of great service to us is in making exploratory incisions in cases where they are necessary. For those of us who believe there is such a thing as primary synovial tuberculosis,—which is very difficult to diagnose,—this operation offers an opportunity to explore the joint much more satisfactorily than any other incision with which I am acquainted, and it does so with very much less likelihood of any permanent interference with the mobility of the joint in case the condition which is expected, and to find out which the operation is per-

formed, is not present, and the real condition is one which does not necessitate more radical procedure. If it should not prove to be a synovial tuberculosis, the joint would not be damaged. If it did prove to be synovial tuberculosis, the appropriate operative procedure could be carried out.

DR. ROBERT B. OSGOOD: In observing these cases I have been struck with two things: First, the lack of operative reaction and, second, the speed with which function has returned. The convalescences have been entirely uneventful.

This incision was devised by Mr. Robert Jones and Alwynne Smith and illustrated by them in an article appearing in the *British Journal of Surgery*, April, 1913, upon Rupture of the Crucial Ligaments and Fractures of the Spine of the Tibia.

Dr. Corner has advocated it also in several articles (*Lancet*, May 9, 1914; *Journal A. M. A.*, Sept. 26, 1914), believing that rupture of the crucial ligaments is not uncommon in severe injuries to the knee. He advances the theory that foreign bodies (joint mice) do not as a rule come from injuries to the condyles and subsequent separation of the cartilage, but from tears of the synovial membrane, closely adherent as it is to the crucial ligaments and therefore easily torn. A flake of fibrin collects and a foreign body nucleus is formed and, as Dr. Codman has shown, gradually increases in size.

The diagnosis of complete rupture of the crucial ligaments is interesting. The ligaments are made tense by any attempt at forward and backward displacement of the tibia on the femur and by inward rotation of the tibia on the femur. The anterior prevents forward and back motion in extension of the leg, the posterior in flexion of the leg, and if both are ruptured there would be an excess of internal rotation of the tibia on the femur.

Corner believes that the repair of these ligaments ought to be done through this incision, the torn ligament being reefed by a non-absorbable ligature which is then carried up through a drill hole in the condyle and tied.

Mr. Jones is sure that they nearly all recover more successfully if they are simply put at complete rest for several months as soon as they can be diagnosed, and advises against operation in the majority of cases.

I believe this is not the incision of choice when a definite diagnosis of a slipping or torn semilunar cartilage has been made. These cartilages can be reached more easily by the lateral L-shaped incision of Mr. Jones, the knee being flexed over the end of the table.

DR. SOUTTER: There is very little to add to what has already been said. The anterior median incision at the knee will give a very complete exposure. When the incision is used in low-grade infectious conditions, in the aged, the operation must be done rapidly. A very fine approximation of the patella is necessary. In these cases the tendon above, sutured rapidly, has been sufficient for later function, in cases infected. This incision allows a pannus to be carefully removed and the joint wiped out. Using this incision in infectious cases, any necessary drainage is possible by tubes inserted into lateral punctures (one inch long) made from within outward, similar to the axilla drainage which is used following breast amputation. One case, an old man, had constant night and day pain, only

slightly relieved by morphine after using the median incision. The joint was very much better drained and cleaned out than by two lateral incisions. The latter would have injured the capsules to a greater degree than the lateral punctures for drainage just described. The operation was done hastily, with careful approximation of the patella and rapid suture of the tendon above, with hardly any pain following the operation and ninety degrees of ultimate motion.

DR. CHEEVER: I have operated on 4 or probably 5 cases by this method. Dr. Brackett properly lays great stress on causing as little trauma as possible, and has mentioned that he does not divide the ligamentum mucosum for this reason. In my cases, this ligament has usually been divided, in order to facilitate exploration of the joint, and there have been no noticeable ill effects, since the cases have all made uncomplicated recoveries.

I should like to suggest the use of sterile rubber dam or gutta percha tissue to cover the articular cartilage of the condyles of the femur during their exposure to prevent the desiccation that occurs and which undoubtedly constitutes an injury.

DR. BRACKETT (closing): Dr. Osgood has said that the incision is not adapted for the removal of the cartilage, which fact should be emphasized, yet although it is not the route of election, the cartilage may be removed through it. The difficulty lies in reaching far enough posteriorly to detach thoroughly the cartilage, but in cases of doubtful diagnosis, when an exploratory opportunity is desirable, this route may be chosen.

THE MANAGEMENT OF OPERATIVE CASES PRESENTING URINARY BACK PRESSURE.*

By ARTHUR L. CHUTE, M.D., BOSTON.

In order that we may have urinary back pressure acting on both kidneys, it is necessary that the obstruction be either at, or external to, the bladder outlet. There are only two common conditions that fulfil this requisite,—prostatic obstruction and tight stricture of the urethra. Practically the condition is always limited to adult males. Congenital strictures in children and strictures of the urethra in women are known, but are too rare to have any real importance.

This subject of the management of cases showing urinary back pressure seems to me of the greatest importance, though it has as yet received relatively little attention, especially from the general surgeons, due, largely, I believe, to the limited conditions under which it is found, partly to a more or less vagueness that surrounds certain phases of it. My opportunity to study this condition has been mostly with cases having back pressure due to prostatic obstruction. I have seen relatively few cases in which

the back pressure has followed a tight stricture, but with the exception that the stricture patients are younger and, therefore, a little better risks, the conditions and dangers have seemed the same.

In my earlier prostatic work, which was done wholly under ether anesthesia, I lost patients whom I should not have lost, and lost them often when I least expected to do so. These patients were often fair operative risks from the general surgical point of view, that is, they showed a moderately good heart; often a urine that was not bad, and sometimes even a clear urine; their blood pressures were not necessarily high; some of them were not very old; on the whole, they were not men whom one would consider good risks, but were patients on whom any reasonable operation should be followed by recovery. The one thing, however, which these patients invariably showed was a residual urine, usually considerable in amount, often turbid, sometimes clear. The fatalities in these cases came usually in from three to five days after operation, and in many instances were supposed to be due to hemorrhage, since the urine was rarely clear of blood by that time. Sometimes the fatal outcome was considered due to a myocardial heart, or delayed shock, or some other vague or rather unsatisfactory cause, but rather directly due to the operative procedure carried out on the prostate.

Some years ago, I lost, within a few days of one another, two patients that raised a question in my mind as to whether the operation on the prostate was the real cause of death in these cases. One of these patients was a doctor, with a large amount of clear residual, whom I sent into a hospital and catheterized, at first intermittently, later continuously. This procedure, which was preparatory to getting him into condition for a prostatectomy, I carried out with the greatest care it was possible for me to exercise. A very competent medical man coöperated with me in the care of this patient, and yet we saw him develop the dry tongue, slightly distended abdomen, hiccup, mental dulness, nausea, bloody and then diminished amount of urine, and the same general picture, ending in death, that I had seen in fatal post-operative prostatic cases. It seemed evident that this man died of pyelonephritis as the result of infection following my catheterization.

In the case of the other patient, I determined to avoid the danger of what one might call "closed" bladder infection by supplying adequate drainage from the start. This man also had a complete retention with an infected urine; he had vomiting and showed marked dyspepsia urinaria. I opened his over-distended bladder under ether. He developed the same signs as the first patient except that he had suppression of urine from the start, and his vomiting continued without intermission. He died 28 hours after operation. It was perfectly clear that pros-

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tatectomy had nothing to do with the deaths of these patients, and yet they presented much the same signs as the fatal cases following that operation, and in which, as I have said, the outcome was supposed to depend on some danger inherent to the removal of the prostate.

These two cases led me to formulate the hypothesis that interference with the function of the kidney was the important element in deaths following prostatectomy. Some years of observation have convinced me of the truth of this hypothesis, and have impressed upon my mind its great importance. Perhaps I can cite no more telling evidence in support of this than the fact that previous to two weeks ago, when I had the misfortune to lose a man following prostatectomy for cancer, who died of sepsis following the careless administration of salt solution, I had done forty consecutive prostatectomies without a death. These patients ranged in age from 47 to 90; they presented both benign and malignant growths; they were done by both the suprapubic and perineal routes; they had both general and spinal anesthesia. The only thing I did for these patients in common was to take the utmost care of their renal function.

As these patients with back pressure come to us, we can divide them into two classes: those with clear urine, and those with infected urine. Contrary to what many people believe, the patient with the infected urine is rather the better risk, as he has developed a certain immunity which the patient with the clear urine does not possess. However, this rule is not without its exceptions. My observations, which have been wholly clinical, point to the fact that the danger in these cases depends upon two different renal conditions, both of which may lead to renal insufficiency and a fatal toxemia. The simplest of these conditions is an acute congestion of the kidney, which follows the relief of a long-standing back pressure. It is attended by a scanty amount of highly albuminous urine, not infrequently bloody. There is sometimes renal tenderness and a slight increase in size of the kidneys. This hyperemia, if such it be, is accompanied or followed at times by a definite infection of one or both kidneys, instanced sometimes by definite pain in one or both loins and accompanied by moderate tenderness. These rather more definitely localized signs, however, are not always present by any means. This latter condition of renal infection is, of course, more serious than the hyperemia. Added to either of these conditions or to the combination of both, we may have that peculiar toxic injury to the kidney that ether exerts upon it, intensified, naturally, when the kidney is already partly crippled. Renal insufficiency, having its origin in either of the above types of renal injury, may lead to fatal toxemia if not recognized and treated.

The management of these cases is largely prophylactic, partly therapeutic. The congestion

that follows the relief of any continued back pressure cannot be avoided, and it may be so intense as to produce what is practically suppression, but is usually less severe. Its treatment consists in the use of fluids by mouth and by rectum, occasionally by the use of salt solution under the skin. Cardio-renal stimulants of the caffeine group I have thought rendered me good service in this condition. In the matter of the infections that extend from the bladder to the kidney and which are most common in cases presenting a non-infected residual we are able to exert a certain amount of prophylaxis. In my experience these cases are less frequent when one opens the bladder suprapubically for drainage than when one attempts to drain the bladder by means of a catheter. Whether one drains an over-distended bladder by use of a catheter or by suprapubic incision, he is perfectly sure to infect the bladder. With a large tube in the bladder, we get the best possible drainage and apparently diminish the probability of renal infection.

The third injury to the kidneys—the injury which ether exerts upon them—may, of course, be wholly prevented by substituting local or spinal anesthesia. Some people believe that gas oxygen anesthesia is equally safe. My experience with it is too small to allow me to draw a definite conclusion. Ether is certainly very dangerous in these cases with urinary back pressure.

When we have renal insufficiency present, due to any of the above factors, the most effective treatment is by the introduction of large amounts of fluid. This is introduced preferably by mouth; by rectum if it is not well borne by mouth; by infusion of salt solution if it is necessary. Contrary to what one might believe, functional rest is not what the kidneys need under these circumstances. They should be pushed to their utmost; in bad cases I push the fluid until either the toxemia clears or edema of the scrotum develops. The amount of salt solution that can be given under the skin with benefit is often very large. I have given 750 cc. at eight-hour intervals for twenty consecutive times. Although this patient was unconscious at one time, he made a good recovery eventually; and his recovery, without any doubt in my mind, was not in spite of his salt solution, but due to it.

The time at which it is necessary to begin to push the fluid with these cases is not definitely fixed. A marked diminution in the amount of urine excreted should put one on his guard and lead to increase of fluids. It is, therefore, very essential that after any operation on a patient showing urinary back pressure, especially a prostatic patient, that one know the amount of urine excreted. In many cases the constant irrigation of these patients, which has made it impossible to notice early a diminution in the excretion of urine, has, in a way, been responsible

for the patient's death. One of the earliest and least recognized signs of toxemia, due to renal insufficiency, is a soft distention of the abdomen. Its presence should lead to vigorous pushing of fluids. A dry tongue, hiccupping, vomiting and mental confusion are all more marked signs and should lead to still more active measures. One should not despair, even with patients who are almost in coma, though good results are rarely gotten at this time.

There are several more or less pertinent facts that I wish to refer to briefly. One is the caution that one should use in placing too much importance upon kidney function tests, in these cases with urinary back pressure. This caution, so far as I am aware, applies no more to the use of one test than to another; and should be exercised in two directions: thus, while it should not discourage us from hoping for a favorable result in a patient showing a very low functional ability, it should not lead us to relax our care in the least in a patient showing a high renal function. The reasons are these: first, in the presence of urinary back pressure, none of the renal tests can give us the potential power of the kidney. Its poor output may simply be due to the embarrassment of back pressure—after the simile of the water wheel which is backed up by high water in the stream below. The efficiency of the kidney may improve wonderfully with the removal of this back pressure.

Two of my patients who went safely through prostatectomy last summer showed, as nearly as we could determine, a phenolsulphonephthalein output of only a little over 5%. On the other hand, no matter how good the functional ability of a kidney may be, one can never predict the degree of harm that an infection may inflict upon it, and, therefore, it should be guarded with the utmost care.

The degree of renal injury that back pressure may cause, and the degree of recovery that is possible, following its removal, was very strikingly shown by a patient under my care a few months ago. This patient, a man of 66, entered the hospital with general edema of a marked degree. Just after the opening of his bladder under novocaine, which I did more from a sense of duty than because I expected to be able to accomplish much, this man excreted 50 grams of salt in 24 hours on a salt-free diet. When last seen, early in December, this man emptied his bladder completely, had no edema, had a normal output of salt on an unrestricted diet.

In the light of the above experience, I make it a rule in the care of prostatitis with a considerable residual and consequent urinary back pressure, to open the bladder under local novocaine anesthesia. This is done to rid the kidneys of the embarrassment of urinary back pressure and to minimize, as far as possible, the chances of renal infection from an infected bladder. The enucleation of the prostate, which is done at a later date, is always

carried out under spinal anesthesia in the bad cases, in order that one may not add to the damaged and especially susceptible kidneys the injury that ether so often brings about.

Such cases of urinary back pressure as I have seen in the past year or two, that have been due to stricture of the urethra, have been operated upon under local novocaine anesthesia. Some have shown a certain amount of extravasation. These patients have, without exception, done extraordinarily well when compared with the behavior of similar patients that I formerly operated upon under ether. In my belief, the difference is due to sparing the disabled kidneys the extra injury that ether inflicts.

It is my firm belief that the mortality in conditions attended with urinary back pressure, especially in prostatectomy, depends upon the condition of the kidneys more than upon the technic of the operation; that much can be done by careful preparation and after-care to determine the post-operative result in these cases.

DISCUSSION.

DR. E. GRANVILLE CRABTREE: I find myself in complete agreement with Dr. Chute's views concerning the management of back pressure kidneys. I think he has hit the point on the management of these cases when he emphasizes that avoidance of disturbance of kidney equilibrium is important.

I have followed a small group of these cases of back pressure kidneys with frequent functional tests, 5 to 10 on a case, during the period of pre-operative preparation with a view to determine the nature of functional changes. The back pressure kidneys fall into two classes, the overdistended uninfected cases and the infected group. I have seen a patient of the first group enter the hospital with a red test of 45%, his function fall to 15% to 20% when he is decompressed by bladder drainage, and be still further depressed with the advent of infection to 5% or 10%. He later recovers to somewhere near his former level. On the other hand a case having led a catheter life for some time will be found to have a low function at entrance to the hospital but gradually to improve or at least remain constant when drained. In either case a stable level of renal function is safe for operation. We, just as Dr. Chute mentions, see a small group of patients who will stand operation on a 5% or 10% function. We are willing to operate on these cases when we are convinced that that represents a stable level of renal activity for that patient and is the best he can do.

I have elsewhere mentioned and merely repeat it here, the high mortality which attended early prostate operations was due to lack of preliminary renal preparation by drainage. The patient was compelled to withstand decompression, infection and operation all at one time and the burden was too great to bear. The effect of some form of preliminary drainage has the effect of distributing the three damaging factors in such a way that the patient is called upon to carry but one at a time.

DR. R. F. O'NEIL: Dr. Chute's convincing presentation opens up a large field of discussion, but it

is impossible to cover more than one or two points in the time at hand.

In his title he lays particular stress only upon those cases of prostatic obstruction in which there is overdistention or complete retention. I am a strong advocate of suprapubic drainage in these cases, particularly those with an uninfected urine, as clinically they do better under this method than any other. I have employed it a number of times and have never regretted having done so, while on one or two occasions where I have not employed it, I have been sorry. I think the chances of renal infection are much diminished and the patient more easily brought to a state of stable equilibrium.

Another very important point is the use of fluids before and after operation and the early recognition of the symptoms calling for their administration, that is, the slight abdominal distension, hiccoughs, mental haziness and vomiting. Much can be done for these patients by the prompt administration of salt solution by mouth, or if the patient is delirious or unconscious, by rectum or under the skin. I remember two recent cases of my own where adequate pre-operative treatment could not be given because the prostate had to be removed for hemorrhage, and was of such size as to prevent preliminary suprapubic drainage. These cases both became delirious, with dry tongue and other signs of renal insufficiency, but made a good recovery after forced administration of salt solution; one patient receiving a subpectoral infusion five times at intervals of six hours.

ACUTE AND SUBACUTE PERFORATIONS OF THE STOMACH AND DUODENUM AT THE MASSACHUSETTS GENERAL HOSPITAL.*

By EDWARD P. RICHARDSON, M.D., F.A.C.S., BOSTON.

The following paper is based on the acute and subacute perforations of the stomach and duodenum at the Massachusetts General Hospital, 104 in number, occurring in 103 patients. Cases of chronic perforation, walled off by adhesions, showing neither acute peritonitis nor abscess formation, have not been included. This series includes the total experience of the hospital from the first operation in 1896 through 1915, a period of twenty years, which may be subdivided into two periods of ten years each, the first including the development of diagnosis and operative measures, the second, a more or less standardized treatment. Both periods are included, for although the first period may not give a true idea of the present operative results, yet it contributes to a consideration of incidence and symptoms, and provides a few surviving cases in which the late results are known.

The purpose of the paper is to consider the results of operative treatment with especial attention to the advisability of a primary gastro-

enterostomy as well as closure of the perforation, although the statistics afforded by this group of cases have also been included.

There were 90 operations for perforation in 89 cases, one duodenal case re-perforating at the end of three months. These operations were performed by 23 surgeons, the largest number falling to any one man being 11. 14 patients died without operation. Of this latter group of 14 cases, 5 were moribund on admission, operation was considered inadvisable in 3, and error in diagnosis occurred in 4 cases, while 2 cases gave no clinical evidence of perforation, which was discovered unexpectedly at autopsy. The clinical diagnosis was confirmed by autopsy 11 times in this group. Five of the cases were gastric and 6 were duodenal. It is fair to assume, from the clinical history and examination, that the remaining cases also had gastric or duodenal perforation.

Of the operated cases, 76 showed an open perforation without walling-off, 6 a diffuse peritonitis although the perforation appeared sealed at the time of operation, and 8 a more or less local abscess.

The operative cases were classed at the time of operation as either gastric or duodenal. These, together with the non-operated cases confirmed by autopsy, gives a group of 100 patients, of which 43 had gastric and 57 duodenal perforations. This grouping, especially in the earlier operated cases, is necessarily somewhat inaccurate; nevertheless, of 8 cases classed as gastric coming to autopsy following operation, 6 were gastric and 2 duodenal, while all of the duodenal group coming to autopsy following operation were found to be duodenal. Consequently I feel that although the gastric group may include duodenal cases, nevertheless, there is sufficient preponderance of gastric cases to make any difference between the two groups real and not apparent. Since the gastric and duodenal perforations are by no means identical in clinical course or amenability to treatment, these two groups are analyzed separately, except where the location of the perforation was indifferent to the fact considered.

In sex there is a marked difference between gastric and duodenal groups. The gastric cases include 24 men and 19 women, or 55.8% of men. The duodenal cases include 54 men and 3 women, or 94% of men.

The average age of gastric cases is 33 years, of the men 36.8, of the women 27.7 years. The youngest was 18, and the oldest 72.

The average age of the duodenal cases in men was 33.4 years. The youngest was 21 and the oldest 67.

Arranged by decades:

	GASTRIC		DUODENAL	
	MEN	WOMEN	MEN	WOMEN
Under 20	1	1		
20-29	3	11	13	2
30-39	3	3	16	
40-49	7	1	13	

* Read before the Southern Surgical Society, Dec. 12, 1916, and before the Boston Surgical Society, Jan. 10, 1917.

	GASTRIC		DUODENAL	
	MEN	WOMEN	MEN	WOMEN
50-59	5	1	9	1
60-69	4	2	3	
70+	1			
TOTAL	24	19	54	3

The striking thing from these figures is the predominance of duodenal perforations in men, and the occurrence of gastric perforations in women, particularly between 20 and 30. Both types of perforation in men are well spread out through middle life, the duodenal occurring slightly earlier than the gastric. Given an acute perforation in a woman, these figures would suggest that it is six times as likely to be gastric as duodenal.

Perforation was in all instances, as far as observed, single. The location of the perforation was determined by autopsy in 17 duodenal and 11 gastric cases, and approximately noted at operation in 24 gastric and 29 duodenal.

The gastric perforations found at autopsy were located as follows:

Anterior wall—8 cases.

- 1 anterior wall near lesser curvature 2 cm. above pylorus.
- 1 2 cm. above pylorus.
- 1 anterior wall of stomach.
- 1 anterior wall, $3\frac{1}{2}$ cm. above pylorus, in anterior part of saddle ulcer of lesser curvature.
- 1 anterior wall 10 cm. above pylorus.
- 1 anterior wall 10 cm. above pylorus.
- 1 anterior wall of lesser curvature near middle of stomach.
- 1 anterior wall, middle of stomach, near greater curvature.

Posterior wall—3 cases.

- 1 posterior wall at pylorus, perforating anteriorly through lesser omentum.
- 1 posterior wall, upper part of lesser curvature.
- 1 posterior wall, midway between greater and lesser curvature, 7 cm. from oesophageal opening.

The location of the gastric perforations, observed at operation but not confirmed by autopsy, was stated as follows:

Anterior wall—22 cases.

- near pylorus—10.
- lesser curvature, near pylorus—4.
- middle of lesser curvature—1.
- high on lesser curvature—2.
- near cardiac end—2.

Posterior wall—2 cases.

These figures show the predilection for the anterior wall near the pyloric end and along the lesser curvature to be expected. Perforation on the posterior wall occurs sufficiently often to be a possibility worthy of consideration.

Location of duodenal perforations as shown by autopsy cases was:

Anterior wall, superior aspect—5 cases.

- anterior superior aspect, immediately below pylorus—4.
- anterior superior aspect, 1 cm. below pylorus—5.
- anterior aspect, 1.5 cm. below pylorus—1.
- superior aspect—1.

Posterior wall—2 cases

The greatest distance noted below the pylorus was 1.5 cm.

Operative findings as to the location of the duodenal perforations not confirmed by autopsy were stated as follows:

1st part, unspecified—12 cases.

1st part, anterior wall—8 cases.

1st part, superior aspect—4 cases.

1st part, inferior aspect—1 case.

anterior wall, 8 fingers below pylorus—1 case.

posterior wall, 1st part—2 cases.

posterior wall, upper second part—1 case.

These figures emphasize what a small area of the duodenum is usually penetrated by these ulcers, and the great vulnerability of a point on the anterior superior aspect, within one or two centimeters of the pyloric ring. A common type of lesion at autopsy was a transverse ulceration close to the pylorus, involving the posterior and superior wall of the duodenum, and perforating at its anterior end through the anterior aspect of the duodenum.

The process tended to become localized about equally in both gastric and duodenal cases. The omentum appeared to close or partly close the perforation 5 times in gastric cases. This was not noted in the duodenal cases. In these when apparent sealing took place it was due to fibrin or adhesion to neighboring organs.

Many cases gave at the time of perforation a history of antecedent indigestion. This was considerably more frequently true in the gastric than in the duodenal cases. These symptoms may be classified in three groups,—first, digestive symptoms suggestive of ulcer; second, digestive symptoms too indefinite or too slight to suggest the source; and third, no digestive symptoms whatever. In 33 gastric cases, symptoms suggestive of ulcer, 49%; indefinite digestive symptoms, 36%, no digestive symptoms, 15%. The duodenal cases showed digestive symptoms suggestive of ulcer, 16%, indefinite digestive symptoms, 54%, no digestive symptoms, 30%.

Duodenal perforations, consequently, appear more likely to occur without any previous warning in the way of digestive symptoms than gastric perforations. In only a small proportion of duodenal cases is the history previous to perforation sufficiently definite to be an aid in differential diagnosis. In gastric perforations, how-

ever, the previous history would appear a definite help in about one-half of the cases.

Premontory symptoms preceding perforation occurred in a considerable number of cases, in the form of definite increase in pain, tenderness, or distress following eating. The exacerbation of symptoms usually preceded perforation by three or four days, rarely as much as two weeks, and is probable attributable to peritoneal irritation from thinning of the ulcer base.

The onset was sudden in 90% of the cases. Occasionally there was a sense of something giving away. The pain was described as sharp, knife-like, agonizing, excruciating, prostrating. In contra-distinction to the pain of appendicitis, which is usually first general and then becomes local, the pain in perforation tends more to be local at first, becoming more diffuse with the spreading of the extravasated fluids. The commonest location was in the epigastrium and right hypochondrium. The principal tenderness corresponded in general with the principal pain. In duodenal cases, the greatest tenderness was referred particularly to the right side, principally the right hypochondrium, but frequently extending down the right flank into the right iliac fossa. In gastric cases, the pain and tenderness although usual in the epigastrium and on the right, might show its maximum on the left and extend down the left flank. The greater tenderness was on the left in about 15% of the gastric cases.

Spasm was commonly general, frequently board-like in character, the greatest spasm usually corresponding in location to the greatest tenderness.

Occasional vomiting occurred in 83% of the cases. It was usually not a prominent or persistent symptom.

Elevation of temperature was usually slight in this series. It was normal or subnormal on admission in 35% of the cases. The highest temperature on admission was 103°.

The leucocyte count on admission was noted in 62 cases. The minimum count was 6,000, the maximum 56,000, both occurring in fatal cases. The average count of the fatal cases was 18,500, of those recovering 19,800. The white counts in both series, those recovering and those dying, showed very similar variations, and no general conclusion as to a prognostic value in the white count could be drawn.

Liver dullness was said to be obscured in 15 cases, and diminished in 11 more. While this physical sign may occur, it seems that these figures tend to exaggerate its frequency. Its presence in a few instances is of little value in the diagnosis of the average case.

Distention was present only as a late development. The abdomen was usually flat, occasionally retracted. When present it is a bad prognostic sign. 18 cases in which more than slight distention was noted gave an operative mortality of 72%.

At the present time the matter of diagnosis needs little discussion. The fact that there is a surgical emergency demanding operation is reasonably clear in all cases.

Confusion with appendicitis occurs especially in the duodenal cases, in which the gravitation of the duodenal contents down the lumbar gutter between the ascending colon and the right flank may give rise to an apparent maximum of tenderness and spasm in the right iliac fossa. In such cases at operation the character of the peritoneal fluid, usually thin and odorless, and considerable in amount, in combination with an appendix, which if abnormal at all, shows only superficial injection without tenseness or necrosis, or possibly adherent fibrin, which it shares with other peritoneal surfaces, should make exploration of the stomach and duodenum an obvious necessity. Disease of the gall-bladder which gives sufficient disturbance for confusion with perforated ulcer should be obvious on exposure of the gall-bladder. At operation the same incision fortunately gives access to the duodenum and pyloric end of the stomach.

A probable preliminary diagnosis of appendicitis, as shown by the location of the first opening in the peritoneum was made in 31% of the duodenal cases. In only two cases coming to autopsy, however, was the source of the peritonitis apparently not suspected at operation. This confusion occurred principally in the earlier cases. In the gastric cases the first peritoneal opening was less frequently low.

Of 90 perforations in 89 cases treated by operation, 32 died, a general mortality of 35.5%. If we include 14 cases dying without operation, the total mortality of the cases admitted is 44.2%. Eight cases, all of which recovered, showed a more or less local abscess at the time of perforation. This leaves 82 cases, 48 duodenal and 34 gastric, which showed a diffuse peritonitis at the time of operation. Of the duodenal cases 15 died, a mortality of 31%; of the gastric 17 died, a mortality of 50%.

These figures, including a period of twenty years, do not give a fair idea of the mortality of perforation with diffuse peritonitis at the present time. If they are divided into two periods of ten years, the second period will more nearly represent the present mortality.

From 1896 through 1905 inclusive, the gastric cases were 11 in number, of which 7 died, and 4 recovered, a mortality of 64%. The duodenal cases were 7 in number, of which 5 died and 2 recovered, a mortality of 77%.

From 1906 to 1915 inclusive, there were 23 gastric cases, of which 10 died and 13 recovered, a mortality of 43.5%. The number of duodenal cases was 41, of which 10 died and 31 recovered, a mortality of 24.4%.

The following table gives an analysis of the mortality for five-year periods.

	GASTRIC			DUODENAL		
	R	D		R	D	
1896 to 1900	1	3—75	% died	2—100	% died	
1901 to 1905	3	4—57	% "	2	3—60	% "
1906 to 1910	10	6—37.5%	"	12	5—29.4%	"
1911 to 1915	3	4—57	% "	19	5—20.8%	"
	17	17—50%	died	33	15—31.2%	died

This table shows a steady lowering of the mortality of duodenal perforations while that of gastric perforations remains high. It also shows an increasing frequency of duodenal as compared with gastric ulcers, probably due in large measure to more accurate localization. In spite of any such error in localization, it would seem assured that gastric perforation carries a considerably higher mortality than duodenal.

The following reasons may partly explain this difference. Duodenal perforations occur in a limited area, while gastric perforations may occur over a wide extent of stomach. A duodenal perforation may therefore be found more quickly and with less manipulation. The possible greater accessibility of duodenal perforations may also favor ease and rapidity of closure. The pyloric sphincter may lessen the outpouring of gastric content through a duodenal perforation, the leakage from which might be limited chiefly to the duodenal contents. The anatomical situation of the duodenum, and its relation to surrounding structures, may limit the dissemination of fluid from the perforation to a greater extent than in perforation of the body of the stomach.

The chief factor in mortality in cases with diffuse peritonitis is distinctly the elapse of time from perforation to operation. Thus the elapse of time after perforation in 27 duodenal cases recovering was 14°, in 11 fatal cases, 25°. The elapse of time in 15 gastric cases recovering was 17°, in 16 fatal cases 19°. Cases which showed a localization of the peritonitis have not been included in these figures.

In this connection, the cases which died in the hospital without operative interference are of some interest. Of 14 cases dying without operation, 8 gave a sufficiently definite history to enable one to estimate the duration of life from the time of perforation to the time of death. The longest survival from perforation to death was 51°, the shortest 24°, and the average 32°. Consequently, if a case is operated on toward the end of the second day, the margin of resistance is naturally extremely small. One may conclude in cases that survive much beyond the second day, that localization of the peritonitis

has occurred, aided presumably by sealing of the perforation or by its small size or position.

Age is an important factor in mortality. In considering this point, I have taken only the second decade, since technical errors are less important as a factor in mortality in this period. The average age of the duodenal cases recovering in 1906-1915, was 36 years, of those dying, 50 years. The average age of the gastric cases recovering was 32 years, of those dying, 51 years. The influence of age on mortality is more clearly shown by decades.

GASTRIC CASES

60-67	3 cases	100 % died
50-59	4 "	100 % "
40-49	4 "	25 % "
30-39	3 "	0 % "
19-29	9 "	22.2% "
23 cases		43.5% died

DUODENAL CASES

60-67	3 cases	100 % died
50-59	6 "	33.3% "
40-49	10 "	30 % "
30-39	12 "	16.6% "
21-29	10 "	0 % "
41 cases		24.4% died

The conclusion seems clear, therefore, that age is an extremely important factor in prognosis. The increase of mortality with age should be borne in mind in connection with operative procedures.

The principal cause of death was peritonitis. Of 32 deaths, 17 occurred within three days, due presumably chiefly to this cause. Six of these 17 cases, all gastric, died within 18°, while the shortest survival in the duodenal cases was 24°. I should take this as further evidence that gastric perforation is a more desperate condition than duodenal. Peritonitis as a principal cause was confirmed by autopsy in 5 instances. One case showed also lobar pneumonia, a second, dying on the third day, subdiaphragmatic abscess, and a third, clinically dying from diabetic coma, a chronic pancreatitis.

Three additional deaths occurred in the first week, and four during the second. Autopsy in three cases showed peritonitis; peritonitis and focal pneumonia; and in a case dying on the tenth day, subdiaphragmatic abscess with perforation of the diaphragm, right empyema and extension into the lower lobe of the right lung with abscess formation.

Of 8 cases dying after the second week, 6 developed subdiaphragmatic abscess as shown once by operation, and in the remaining cases by autopsy. Death occurred on the 16th, 33d, 38th, 40th, 44th, 54th days. Two cases were drained by operation, one case apparently recovering from the abscess after multiple operations when obstruction developed. In a third case, a resulting empyema was drained, but an undrained subdiaphragmatic abscess was found

at autopsy. In these 6 cases, there was an accompanying empyema in 3 cases, and an abscess of the lung in one, in two instances due to direct perforation of the diaphragm. Of the total 8 cases of subdiaphragmatic abscess, 6 followed duodenal and 2 gastric perforation.

The remaining two cases died on the 15th day, one of suppurative nephritis, the other of perforation of the descending colon with peritonitis.

It seems to me that the occurrence of subdiaphragmatic abscess is a matter of particular importance. It developed eight times in 32 cases, or in 25% of the deaths. It was only recognized clinically, and operated on in two cases, both of which ultimately resulted fatally. Extension of the process through the diaphragm occurred five times, in 3 cases by direct perforation. These facts emphasize the importance of careful study by clinical examination and x-ray in cases of unexplained temperature, and the necessity for exploration on the suspicion of abscess.

Of the 82 cases with diffuse peritonitis, 70 were treated by closure or drainage of the perforation alone, and 12 had a posterior gastroenterostomy added. Of these 12 cases, 4 gastric and 8 duodenal, 2 died, one from diabetic coma and one with delirium tremens. This would appear to give a lesser mortality to those cases in which gastroenterostomy was done, but it should be noted that these cases were favorable ones at the time of operation.

The cases treated by drainage or packing without suture showed a higher mortality than those closed by suture. Of course this was largely due to the employment of this measure in the particularly bad conditions where speed was important, or in perforations difficult of access, or having much surrounding induration. However, the difference is so great that I feel that even in such cases a greater expenditure of time and more manipulation is justifiable to secure good closure. The use of an omental flap sutured over the perforation may be important in this connection.

General irrigation with salt solution was employed in the majority of the earlier cases; its use in the latter cases was much less frequent. The impression given by this series is that the expenditure of time and increase of shock its use requires hardly justifies it as a routine measure. In this connection, culture of the peritoneal fluid obtained at operation is of interest. In 35 cases, culture gave a growth 7 times and no growth 28 times.

Drainage of the neighborhood of the perforation was almost universally employed. Judging from the results of culture of the peritoneal fluid, drainage might have been omitted in a larger proportion of cases. However, as it is difficult to tell at operation just in which cases it may be helpful, its use in so many cases, even if occasionally unnecessary, would at least seem

justifiable. A tube to the bottom of the pelvis through a supra-pubic stab-wound was used in a small proportion of cases. It is hard to estimate the effect of this measure. At any rate, it would seem advisable only in the case of a considerable collection of definitely purulent fluid in the pelvis.

The great question is, of course, whether gastroenterostomy is advisable as a general procedure. This will be taken up particularly in discussing the late results. As far as the immediate recovery from perforation is concerned, it is not obvious how a further employment of gastroenterostomy would have benefited the mortality. The cases did not die from inability of the stomach to pass food into the intestines. They died of shock and sepsis. In looking over the records, it is hard to see that the obstruction caused by infolding through suture of the ulcer excited any bad influence on the mortality. It may be argued that gastroenterostomy relieves tension on the sutured perforation, and so both lessens the danger of leakage and promotes healing. But if the perforation is reasonably well closed, the leakage does not seem likely to occur. It seems to me that the question of gastroenterostomy at the time of closure of the perforation is a question of its effect on the remote results of the operation to the patient, but not of aiding the immediate likelihood of recovery from perforation.

The question is, are the late results following the closure alone of perforated ulcers sufficiently good to make the additional time needed for a posterior gastroenterostomy an unnecessary risk? An attempt has been made to find out the late condition of the patients with especial reference to this point. The cases recovering from subacute perforations have been included, since the effect of perforation and closure on the gastric and duodenal wall should be approximately the same in either case.

Of the total cases surviving, 57 in number, 12 cases have no bearing on this question, since a gastroenterostomy was performed at the time of the primary operation. Of these 12 cases, 5 gastric and 7 duodenal, 8 cases have been heard from at periods of from one to eight years. Two gastric cases were both well. Four duodenal cases were well, one duodenal case when last heard from had recurrent haemorrhage beginning five years after operation, and one had died after 19 months apparently from urinary sepsis following stricture.

Of the remaining 17 gastric cases which recovered following closure or drainage without gastroenterostomy, 12, or 70%, have been heard from. Two cases have required a secondary gastroenterostomy, 1 at the end of two months, the other at the end of two and a half years. The first case required a third operation after 6 years, freeing of gastric adhesions. Both cases were well when heard from, 1 year following the last operation. Two cases had definite

gastric symptoms. One of these was strongly alcoholic, and died four years following operation. Six cases were free from gastric symptoms. One of these developed phthisis at the end of four years, dying eight years after operation. A second, after freedom from gastric symptoms for eleven years, developed an obstructive carcinoma of the esophagus, for which gastrostomy was done. Two cases at the end of three years were in fair health, but required limitations of diet. Thus, to sum up, 6 cases, or one-half, were apparently as completely relieved as they would have been with an additional gastroenterostomy; two cases, while not completely relieved, had tolerable symptoms, while in 4 cases, two of which required further operation, the late results were definitely bad.

Of 27 surviving duodenal perforations treated without gastroenterostomy, 20, or 74%, have been heard from. One of these cases had a second perforation three months following the first, at a point one-half inch distal to the original perforation on the superior aspect of the first part of the duodenum. A gastroenterostomy was done as well as closure, and the patient reported well two years later. Four other cases had a subsequent gastroenterostomy. One of these was done one month after closure by advice as a preventive measure, although the patient had no definite digestive symptoms. One case was free from disturbance for ten years, when he developed moderate digestive symptoms, for which appendectomy and radical cure of right inguinal hernia was done. Of the remaining 14 cases, 11 reported themselves well at periods of one to twelve years. Two cases had slight symptoms at the end of one year, and one case developed moderate symptoms at the end of five years of freedom.

To sum up, in these 20 cases, there was one re-perforation, four cases had a secondary gastroenterostomy, two cases had moderate, and two cases slight digestive symptoms, while eleven cases were apparently relieved following closure of the perforation. The results were apparently good in 11, or 55%, of the cases when heard from, and tolerable in 13, or 65%, of the cases.

In both duodenal and gastric cases, it is plain that a primary gastroenterostomy might have avoided a considerable number of secondary operations. At the same time, about one-half of the cases followed reported themselves well and free from symptoms. It is possible, of course, that symptoms may develop later in these cases. At the same time, as long as freedom from trouble persists for a considerable period in so many cases, it is well to be conservative in adding a method of treatment which prolongs considerably the time of the primary operation. It is not fair, either, to consider that an additional gastroenterostomy would give 100% of cures. There is no question but that gastroenterostomy may be safely added at the

primary operation in young people operated on shortly after perforation. Whether or not the added gastroenterostomy will unfavorably influence the operative mortality will depend on the surgeon's judgment in selecting cases, and his speed and skill in carrying it out.

The present series of cases suggests the following contra-indications to gastroenterostomy. It should not be performed in ulcers definitely gastric. The mortality of closure alone, 43.5%, is too high. In addition, closure of such ulcers is less likely to cause pyloric obstruction, and the benefit of gastroenterostomy is likely to be less marked than in ulcers of the duodenum.

In perforated duodenal ulcer in cases beyond middle age gastroenterostomy should be rarely added, since the mortality of closure of the perforation alone is high in cases at this time of life.

For the remaining duodenal cases, it is a matter of individual judgment. If there is the least question as to the patient's power of resistance to the peritoneal infection, it should be omitted, since he has at least an even chance of future freedom from symptoms without it. At the worst, it may be done as a secondary measure. It is true, that many people prefer to get along with discomforts rather than go to the time, trouble and expense of a second operation, and much might be saved in these cases. At the same time, the main aim should be reduction of the primary mortality, and other considerations should remain entirely secondary to this.

In conclusion, I should like to note the following points:

This series gives no evidence that pyloric obstruction is a factor increasing the primary mortality which might be avoided by an immediate gastroenterostomy.

Gastric perforations carry a distinctly higher mortality than duodenal.

The mortality of both gastric and duodenal perforations is high after middle life.

One-half the cases of perforation, treated by suture alone, were apparently cured following operation.

Therefore, an additional gastroenterostomy may well be avoided in cases of gastric perforation, in patients beyond middle life, and in any case where the general condition or elapse of time since perforation suggests possible death from peritonitis.

This series suggests, that for the average surgeon, at least, the rule should be to close the perforation, and the exception to add a gastroenterostomy.

DISCUSSION.

DR. I. J. WALKER (by invitation): In a previous paper on this subject, read before the Massachusetts Medical Society, June, 1915, I summarized and derived certain conclusions from a study of the cases from the surgical records of the Boston City Hospital from 1905 to 1914 inclusive. These were 78 in number. There have been 53 cases since then up to Jan. 1, 1917, making 131

total of 131 in twelve years. A completed study of these cases has added really nothing new in the way of etiology and diagnosis of this condition. One hundred and twenty-two were males and 9 were females. The average age of the males was 34.25 years and the females 26 years. The youngest patient was seven years of age and the oldest seventy-one. The site of the perforation was in the stomach in 75, in the duodenum in 52 and at the pylorus itself in 4. In all except three the perforations of the stomach were found within two inches of the pylorus. In the latter the openings were near the cardiac end. The perforations of the duodenum were all upon the first portion and anterior wall except two, the latter being upon the posterior wall of the first portion.

It would seem that the most important point for discussion would be along the lines of treatment, which really narrows down to two questions. First, as to the necessity of drainage. It has been rightly said that drainage is not always necessary in these cases seen soon after perforation, since the contents of the stomach and duodenum are relatively sterile and what infection there is present will be cared for. In 34 cases of various duration, cultures were taken from the fluid in the peritoneal cavity, of which 14 showed bacterial growth and 20 were sterile. However, there is no way of determining macroscopically in a given case whether or not the fluid is sterile and, if not sterile, what may be the number and virulence of the organisms. In this series 6 cases were closed without drainage, with 5 recoveries and one death, the latter from general peritonitis. I think we must admit that while cases do recover without drainage the safest procedure would be drainage in every instance. Secondly, I wish to refer to operative measures in addition to closure of the perforation, such as gastroenterostomy. Theoretically, as in chronic ulcer, we should like to excise, cauterize or enfold the ulcer and do a gastroenterostomy in every case. Practically, however, this has up to now not seemed advisable owing to the condition of the patient or to the danger of spreading the possible existing infection. I think that we must all agree that gastroenterostomy becomes a necessity where the lumen of the pylorus or duodenum is narrowed as the result of closure of the perforation. In this series, and for this reason, gastroenterostomy was done in seven cases with a recovery in each instance. Gastroenterostomy becomes a matter of judgment in a small group of cases seen soon after perforation where the infection is slight and the patient in good condition. It is not a necessity in this group as we well know that patients recover with closure of the perforation alone. However, while we are quite sure that a certain number of patients are cured of ulcer symptoms by simple closure of the perforation, we are also sure that certain others have recurrence of their troubles. I am not in a position to give statistics on this question but hope to later when these cases have been followed up thoroughly. I do believe that the average surgeon will have a lower mortality in a large series of cases, by simply closing the perforation and later doing a gastroenterostomy, if necessary.

Results. There were 129 cases operated upon by 18 surgeons with a mortality of 34.3-8%. Two cases died without operation, the diagnosis being confirmed at autopsy. Five of the cases operated upon were practically moribund at the start and

died within two hours. The average duration of the perforation was 27.7 hours. Eliminating 12 who were operated upon more than 48 hours after perforation, we find an average duration of about 17 hours. Of 30 operated upon during the first four hours only one died. This death occurred on the sixth day after operation from a secondary hemorrhage in an arteriosclerotic individual. Of those operated upon from five to twelve hours after perforation, the mortality was 12.1%. Of those 13 to 24 hours after perforation, 36.3%. Of those 25 to 48 hours after perforation, 83.1%. Twelve were operated upon, in which the perforation had existed more than 48 hours, with five deaths and seven recoveries. Of those who recovered in this group it should be said that each had a walled-off abscess.

Conclusions. Simple closure of the perforation, with drainage of the peritoneal cavity is the safest procedure in the majority of cases.

Certain cases, who have recovered from perforation, are cured of ulcer by simple closure of the perforation. Unquestionably, others have recurrence of their troubles. It would be well that investigation be carried out in order to give accurate statistics in regard to the question of recurrence of ulcer following simple closure of the perforation.

The mortality in cases of perforation can be greatly lowered by early operation.

DR. CHEEVER: I approve very heartily of Dr. Richardson's and Dr. Walker's disapproval of the routine performance of gastroenterostomy in operating for acute perforation of the stomach and duodenum, since it seems certain that, in serious cases, this would contribute to the mortality.

In this connection as tending to explain the comparatively low mortality in the gastroenterostomy cases reported by Dr. Richardson, I should like to ask him whether this procedure has not only been carried out on well-selected cases, but whether it has not been performed only in the most recent years and therefore under the most improved technique?

As to the comparative mortality of acute perforation of the stomach and duodenum, I wish to direct attention to the fact that the amount of extravasation, which must be a very important factor, is much greater in the gastric than in the duodenal lesion, the reason being that the peritoneal irritation of impending or actual perforation, according to all analogy, must cause a reflex spasm of the pylorus which prevents the escape of gastric contents and limits the extravasation to the comparatively scanty contents of the duodenum itself. No such mechanism exists evidently in the case of the gastric perforation. Moreover, my experience has been that gastric ulcers, as a rule, are larger than duodenal ulcers, which still further increases the tendency to copious escape of contents.

DR. JOHN B. BLAKE: About twenty-five of the City Hospital cases, almost all of them young or middle age men, came to the first Surgical Service. In a large majority of these a history of previous gastric disturbance was not obtained, unless eructations of gas alone are to be considered signs of definite stomach lesions. My impression has been that we are more apt to get a history of previous stomach trouble in cases more than forty years of age. It is somewhat puzzling to conjecture where these cases were ten years ago. They cannot be an entirely new development, yet they seem to me

many times more numerous now than formerly, and, as they present positive operative indications in almost every instance, we could not have missed them all even ten years ago.

I should like to congratulate Dr. Richardson upon an excellent and very thorough bit of surgical work; and Dr. Walker for a careful compilation of the Boston City Hospital cases.

Dr. E. P. RICHARDSON (closing): In regard to apparent stricture of the pylorus as an indication for gastroenterostomy, it seems to me that the matter should be judged not by the degree of constriction of the pylorus but whether the patient is likely to survive his peritonitis or not. If the patient gets over his peritonitis, there is time before he starves for further measures to avoid pyloric obstruction, either a secondary gastroenterostomy, or possibly a jejunostomy under local anaesthesia. My impression from these cases is that food is more successful in passing the pylorus than one would judge from the condition found at operation. I think the question of gastroenterostomy should be judged from the probable outcome of the peritonitis and not from the apparent condition of the pylorus.

In differential diagnosis, the important question is whether there is a definite history of ulcer. An indefinite history of indigestion, which may come equally well from other conditions in the abdomen, does not help in diagnosis. It is very probable that many of these histories were inaccurately taken. The point which I wish to make, however, that there is a difference between gastric and duodenal ulcers in the frequency of definite ulcer symptoms, is sufficiently suggested by these cases, since any inaccuracies would presumably affect both groups equally.

In reply to Dr. Cheever's question, whether primary gastroenterostomies were not done in the later cases, while I have no definite figures, I feel sure that the majority were done in the past ten years. The description of the size of the perforation was so loose that I was unable to determine whether gastric perforations tended to be larger than duodenal.

Original Articles.

APPENDICITIS.*

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APPENDICITIS is like many other subjects in various fields of work in that the more we see of it, the less we know of it, or more properly speaking, the more we see of it, the more we realize that we are only learning about it. Said quickly, it sounds very common and uninterest-

ing, and suggests pain in the lower abdomen, vomiting, fever and tenderness. But said slowly and with reflection of past experience, we realize that appendicitis is much more than this, and the greater the experience, the larger the number of perplexities and mistakes.

The condition was first described by Heister in 1755, who noted while dissecting the body of a malefactor in November, 1711, "the vermiform process of the caecum preternaturally black and adhering closer to the peritoneum than usual."

The symptomatology was first described by Mestivier in 1759. A pint of pus had been liberated from the right lower quadrant by incision. The wound healed, but the patient died, and autopsy showed a gangrenous appendix containing a large, very rusty pin.

Mellier, in 1827, was the first to suggest that the condition was probably not rare,—that the appendix suppurated and bursted, and was the cause of abscess in the right lower quadrant. He failed to receive the glory which he deserved because Dupuytren, who was the great surgical authority of the day, strongly ridiculed his views. But to Mellier really belongs the credit of first formulating correct conclusions as to the existence of inflammation of the appendix in a chronic form, of recognizing the causal relationship between this chronic affection and suppurative tumors in the right iliac fossa, and of first suggesting the possibility of surgical interference.

Sporadic articles occurred in the literature from this time forward to the valuable contribution of Fitz in 1886. Fitz was the first to recognize that the various abdominal disorders known as perityphlitis, typhlitis, caecitis were but manifestations of primary inflammation of the appendix. He also was the first to urge very early operation, at least as early as the third day. His, furthermore, is the first publication in which the word appendicitis was used.

Hall of New York, on May 8, 1886, operated for strangulated hernia, and found the sac full of pus from a ruptured appendix. This he tied off and removed; then, through an enlarged incision, manually explored the abdomen, breaking up adhesions and emptying pus cavities. The patient recovered. This is the first case of perforative appendicitis successfully treated by laparotomy and removal of the appendix.

On April 27, 1887, Morton of Philadelphia successfully removed an appendix and drained the abscess. The preoperative diagnosis, however, was intussusception, or perityphlitic abscess. The first case in which a preoperative diagnosis of appendicitis was made and operation successfully done for its relief was by Sands of New York, on December 30, 1887. The patient made an excellent recovery.

So much for a brief résumé of the history of the subject. Let us now consider more particularly the signs and symptoms of acute and chronic disease of the appendix.

* Read before the Middlesex East District Medical Society, Nov. 8, 1916.

At the outset, you will agree with me that there are so many exceptions to what we may call a "type case," that it is impossible adequately to cover even this part of the subject in the time at my disposal. I have, therefore, elected to recite cases in my own experience in private and hospital work, cases which stand out in my mind as illustrative of some particular variation or departure from the usual.

The most constant and valuable symptom of acute appendicitis is pain. Usually the pain is at first quite general in character, and usually colicky. Later it is usual for the pain to become localized in the right lower quadrant, and to become more constant in nature. There is not infrequently a history of several days of lassitude, or headache, or slight digestive disturbance, especially constipation. There may, however, be no antecedent indisposition, but the onset may be with overwhelming suddenness. Again, it may be insidious, manifested only by dragging in the right lower abdomen, and this nagging may be followed without other warning by chill and prostration from rupture.

I recall a young college student of twenty, who for a fortnight experienced pulling in the right lower quadrant when walking fast or carrying a suit-case. One day, this pulling was evident when getting up from a chair, but not exquisite. In fact, that night he played water polo in the tank in his dormitory. On going up to his room, he was taken with violent rigor, and at operation showed a ruptured, completely gangrenous appendix.

Again, the pain may be in the lower chest, more especially in the back. The temperature may be high, white count high, respiration rapid. This picture is not uncommon in children, and may be confounded with pneumonia. The converse is, also, true. Cases of pneumonia may be diagnosed appendicitis. The nature of the pain is not surprising when we remember the distribution of the lower intercostal nerves on the abdominal wall. Regarding the shallow respiration, I think it is important to note whether the respiration is thoracic or abdominal. If either region is splinted, *i.e.*, held still, it is the affected region. Therefore, in these confusing cases, if the respiration is chiefly thoracic, the pathology is probably intra-abdominal, and vice versa.

Again the pain may be well around in the flank, or even in the right upper quadrant. You will recall that the large bowel develops chiefly in the left of the belly,—that the part which is destined to be the caecum first passes upward, then to the right, and finally downward into the right iliac fossa. This is known as the rotation of the large bowel. The phenomenon may be interrupted at any point. The caecum may never leave the left side of the belly, but this is very rare. But it is not very rare for it to remain in the right upper quadrant. Consequently, an acute appendix in this situation may simulate cholecystitis.

On account of the possibility of undescended caecum, I believe it is a good plan to make the incision for appendectomy in children a little higher than in adults, in those cases where the spasm is pretty general throughout the right side and there is no guiding mass. I commonly use a right rectus incision about two and one-half inches long, with the upper end at, or a little above, the level of the umbilicus. If the appendix is in normal position, it can be readily reached because the thin belly walls permit retraction. If the caecum is undescended and the appendix is high, only slight lengthening of the incision upward may suffice, and the resulting wound will still be small. If a low incision has been practised, great extension of the cut upward may be necessary, or even a second higher incision.

As an illustration of the advantage of this high incision: A boy of nine, who had been ill several days with fever, right-sided abdominal pain, and vomiting. His belly was like a board throughout the right side. A diagnosis of ruptured appendix was made. The abdomen was opened through a right rectus incision at the level of the umbilicus. The right iliac fossa and pelvis were bathed in foul pus. No inflammatory mass could be felt, nor any large bowel seen. Following upward, a cake was felt beneath the liver well in the flank. The wound was enlarged upward. Pus was seen coming down along the flank from this mass. A gangrenous appendix was liberated and with very great difficulty ligated and removed. Drains were placed above, to the side, and to the pelvis. The boy, although desperately ill, made an uneventful convalescence, and was discharged with a solid wound only about three and a half inches long.

At this juncture, let me cite a case recently operated upon through the kindness of Dr. Sopher. It is apropos of not finding the caecum in the iliac fossa, but for another reason. The patient was a girl of nine. The abdomen showed no guiding mass. I had made my usual incision. No inflammatory mass could be felt. The sigmoid presented. The ascending colon and caecum were not evident. The possibility of non-descent of the caecum directed me to feel upward in the flank. There the upper part of the ascending colon was encountered coming up from beneath a tough sheet of membrane. The lower one-half of the ascending colon and caecum lay plastered down against the posterior abdominal wall by this membrane, and were as much retroperitoneal as the lower part of the duodenum. A vertical incision was made through this, the caecum mobilized, and a curled-up, swollen appendix liberated. Despite the unavoidable handling of bowel, her convalescence was practically free from gas.

The caecum in one of the subjects in my section in anatomy this year is very high. The terminal six or seven inches of ileum ascends

from the pelvis to join it, and is held to the posterior parietes without any mesentery.

Pain is the most constant and reliable symptom of appendicitis. Muscle spasm is the most constant and reliable sign. Naturally it is most valuable when unilateral, and especially when it is more or less confined to the right lower quadrant. We must distinguish between voluntary and involuntary spasm. In order to differentiate, we must get the confidence of the patient that we will not hurt him. This is especially true in children and in nervous adults. It is well that the hands be warm, so as not to chill the abdomen. It is well to begin the palpation in some other part of the abdomen. It is my practice at first merely to lay the whole hand gently against the belly, using only slight pressure, beginning in the left upper quadrant, passing down to the lower quadrant, and then in the right upper quadrant passing down to the lower quadrant. By this procedure, we may learn whether the abdomen is soft or tense or rigid, and where tenderness is greatest. Having assured the patient of our gentleness, begin in the left upper quadrant again and pass around as before, but this time pressing a little firmer and with the flat of the fingers instead of the whole hand. Talking to the patient to distract his attention, having the legs drawn up or the mouth held open, ostensibly to look at the tongue, will aid in relaxing the abdominal muscles. Having found the area of greatest resistance, press in steadily and firmly, noting how deep the palpation can be carried with the patient's attention distracted. If true involuntary spasm is present, unabating resistance will be encountered, with a greater or lesser degree of pressure in a given case. As a concluding manoeuvre, place the flat of the fingers of both hands over the area under suspicion and make a sudden inward thrust. If true spasm is present, the thrust will be checked with sudden setting of the muscles.

The abdomen of a patient with simple belly-ache, green-apple colic, may show tenderness to pressure and, therefore, more or less voluntary spasm; but the longer gentle palpation is continued, the softer the belly will feel. There will be no true muscle spasm.

The abdomen of a patient with intestinal obstruction may be much distended and very tense, so that it feels firm, but the longer gentle palpation is continued, the softer the belly will feel. If there is no concurrent peritonitis, there will be no true muscle spasm. The distinction between firmness from tenseness and firmness from rigidity is most important.

The area of spasm may be great or quite small, it may be elicited with a variable degree of pressure, but will always be present in acute appendicitis. The more acute the infection, the more evident the spasm. An old abscess in which the virulence of the organism is attenuated may be protected by much less spasm than an acute unruptured appendix. Cases of severe

lead poisoning may offer perplexity. Cases of poliomyelitis, in which there is a peculiar selective involvement of the lower intercostal nerves, may offer perplexity. Cases of typhoid fever may offer perplexity. Maurice Richardson has written in his clear manner on this subject, and has recorded a number of illustrative cases from his large experience. Although typhoid fever is not nearly so common now, it should always be borne in mind.

The neglected cases, with huge, walled-off abscesses, are now seldom seen. The records at the Children's Hospital for the last twenty-four years show only two cases pointing at the umbilicus,—one operated upon by Dr. Cushing in 1895, and one by Dr. Lovett in 1899. However, the possibility should be borne in mind.

Only a fortnight ago, I saw in the Out-Patient Department of the Children's Hospital a girl of three with a temperature of 102, who had been ill for *three months* with abdominal tumor, constipation, and frequent and painful urination. She had been at another institution where diagnosis of inoperable tumor had been made. She showed a sharply bulging prominence at the umbilicus, tender and rounded. Palpation revealed a deep mass extending downward and more to the right than left. I admitted her with conservative diagnosis of abdominal abscess, considering the possibility of appendix abscess or infected cyst of the urachus or suppuration of a Meckel's diverticulum. Dr. C. G. Mixer, who was on house duty at the time, found at operation a huge, stinking abscess the size of a grape-fruit, presumably of appendiceal origin. Culture of the pus showed *B. c. communis*.

A rectal examination should *always* be made. A vaginal examination should be made in appropriate cases. In cases with low lying pelvic appendices these examinations may disclose resistance and tenderness, or even a mass,—invaluable information which may be ascertained in no other manner.

Later I wish to consider the differential diagnosis between appendicitis and ureteral stone. Our genito-urinary confrères hold that cases in which appendectomy has been done but pain persists, are always cases of unrecognized ureteral stone. On my last service in the Surgical Out-Patient at the Massachusetts General Hospital, I saw a case in consultation with the visiting man on the medical service. It was a question of ureteral stone or pus kidney. The appendix had been removed a year ago. Pain had been present in the right abdomen for a week. The scar showed no hernia. There was no spasm in the back, over the kidney, or beneath the scar, but low in the right lower quadrant towards the median line. The temperature was 101. A rectal examination discovered a huge prostatic abscess, more on the right side. I cannot too strongly emphasize the value of examination by rectum.

The chronic appendix may cause trouble in

two ways. In the first place, from previous inflammation, it may be partly occluded or kinked, so that it is prone to acute exacerbations. Secondly, it may cause trouble mechanically through adhesions to different structures,—the bowel, the female adnexa, the bladder, the ureter. Such adhesions may exist without causing any symptoms. Others may be responsible for digestive, urinary, or menstrual symptoms.

I note that Dr. James Jackson is to read, at your next meeting, on intestinal adhesions. I shall, therefore, merely touch on this phase of the subject in this paper from a surgical viewpoint.

The most marked disturbance I have ever seen from chronic appendicitis occurred in a young girl who displayed all the signs and symptoms of intestinal obstruction, with the addition of acute inflammatory trouble in the right lower quadrant. Operation showed all the small bowel tremendously distended, free fluid in the abdomen, and a long, chronic appendix caught down firmly across the terminal ileum, and acutely inflamed. She had had definite attacks of appendicitis in the past, but why she had not had more disturbance from partial obstruction before this acute attack, I do not know. The operation was difficult, but has given entire relief. Such marked disturbance from appendiceal adhesions must be very rare. Usually, the disturbance is less definite, and frequently offers some of the most difficult problems in diagnosis.

The adhesions about the caecum may result in incompetency of the ileocaecal valve. Associated with this, there may be vague digestive disturbance, which gradually reduces the general health, may lead to lassitude, tired-out feeling, disinclination to exercise, general loss of muscle tone, poor posture, and ptosis. Once this has occurred, the patient will suffer more from the sequelae of the adhesions, particularly the ptosis, than from the adhesions themselves. With the ptosis, there may be angulation of the bowel, loss of muscle tone, stasis, constipation, and absorption. I believe that the damage to various tissues from intestinal absorption has been exaggerated, but there can be no doubt that the interference of so important an excretory system must certainly be harmful to the individual from absorption of effete products. But this leads us beyond the domain of this paper.

Again, adhesions about the region of the caecum provoke secondary gastric disturbances. The most profound cases of hyperacidity which I have seen were both in young men with chronic appendices, adhesions of the right iliac fossa, and incompetent ileocaecal valves. The history of such cases may be suggestive, but the only reliable evidence is gained by x-ray examination. Here again, I believe that the pictures of the meal in different parts of the gastro-intestinal tract may be suggestive, but do not warrant in the majority of instances positive statements regarding the mobility of the intestines.

It is to be remembered that such plates indicate the position of the bowels only at one given time. The position of the bowels at this time may look queer, but it cannot be said that this position is permanent. The only certain method is by the fluoroscopic screen, by which method the position of the bowels may be observed for a considerable time with the patient standing and recumbent. Furthermore, palpation may be done with the patient on a fluoroscopic screen, and any binding together of coils of bowel may be determined. The bismuth or barium enema with fluoroscopic examination usually gives more valuable information in regard to appendiceal adhesions than taking by mouth.

Roentgenologists not infrequently have unwittingly led us astray. I think it is well for the surgeon to be present at the fluoroscopic examination, not to oversee the work of the roentgenologist, but to aid him by friendly discussion of points as they present themselves.

Organic disturbance of one part of the gastro-intestinal tract may lead to functional disturbance of another part of the tract. I believe that this secondary disturbance of function in another part of the tract may in time in some cases result in actual organic trouble. We are all familiar with the frequency with which chronic appendicitis and chronic cholecystitis, with or without gallstones, is met. The multiplicity of lesions of the gastro-intestinal tract is to be borne in mind.

In cases with gastric symptoms, which show by fluoroscopic examination undoubted adhesions in the region of the caecum, I think it is well, therefore, to investigate the gall-bladder. I have twice failed to do this, and in both cases the gall-bladder has been the cause of subsequent trouble. In both cases, however, the removal of the appendix and freeing of caecal adhesions was but a small part of the operating, one having in addition a total hysterectomy, with resection of upper third of the vagina. It would have been unwise to have attacked the gall-bladder in these cases, but they illustrate the necessity of not laying too much stress on adhesions in the right lower quadrant from chronic appendicitis.

Urinary symptoms due to retrocaecal appendices, adherent over the course of the ureter, require much study. In May, 1913, your president kindly referred to me a case with a diagnosis of appendicitis. The attack was a mild one. The pain was well in the flank. Routine examination of the urine showed pus. X-ray showed a shadow in the course of the lower ureter on the right, presumably a phlebolith, but possibly a ureteral stone. Cystoscopy showed pus coming from the right ureter. A ureteral catheter, however, met no obstruction. This determined the location of the incision. The abdomen was opened with the ureteral catheter in place, and a long, firmly adherent chronic, retrocaecal appendix with recent, acute exacer-

bation was found lying over the ureter. It was removed with difficulty. Whether or no this colon infection of the right kidney was due to this firmly adherent appendix or to haemotogenous infection, the diagnosis of appendicitis was correct.

Another perplexing case was a doctor seen in June, 1916, kindly referred by Dr. MacDonald of Meteghan, Nova Scotia. As a boy, the patient had suffered greatly with what was called indigestion. Four years ago, he was seized with so violent a pain in the right flank, mid-way between the crest of the ileum and the costal margin, that he sank to the ground and writhed in agony. The pain subsided in about a week. A month ago, he was seized with a similar but milder attack, and pain and soreness have persisted. In Halifax, the urine was found to contain microscopic blood, and a diagnosis of ureteral stone was made, for which he was referred to me. Mindful of Dr. Heath's case above related, and of the past history of indigestion, I told the doctor at the first examination of the possibility of a retrocaecal appendix adherent over the ureter. X-rays for stone by Dr. Walter Dodd were negative. Ureteral catheterization and injection of renal pelvis by Dr. Arthur Crosbie were negative. Fluoroscopic examination showed beautifully the caecum descending only part way, when in upright position, and then evidently somersaulting over a fixed point where there was a small shadow, presumably the partly filled appendix. A very difficult appendectomy was done. The appendix was fully five inches long, entirely retrocaecal, and applied firmly over the ureter to the lower pole of the kidney. He is absolutely relieved of his symptoms.

Operations for chronic appendicitis should not be done without very thorough preoperative investigation, there are so many other pathologic conditions in the right lower quadrant whose symptomatology closely simulates chronic appendicitis,—Jackson's membrane, ptosis, caecum mobile, ureteral stone, adnexal disease, tabes mesenterica, chronic intussusception, concealed herniae, unduly tense psoas fascia, early malignant disease and tuberculosis of the caecum, Lane's kink, and developmental anomalies of the bowel, ureter, and genitals.

Occasionally a patient is seen for the first time who presents a definite appendix cake, and who is evidently getting better. I believe under certain conditions in such cases it is well to defer operating. This is true if the patient has some serious cardiac or pulmonary condition. is greatly debilitated, or has some serious constitutional affection, such as advanced nephritis, diabetes, exophthalmic goitre, etc. Of course, if this plan is pursued, the patient should be under close observation, preferably in a hospital, so that immediate operation may be done, if necessary. A four-hourly pulse and temperature chart and a bi-daily white count chart should be kept.

Let me say here that I think it is very dangerous to decide for or against operating on a single white count determination. During this period of waiting, the appendix cake is becoming more definite and, should operation later become necessary, it may be a much shorter and simpler matter than when first seen. In fact, it may be done with very little, if any, handling of the intestines, which is a great desideratum in debilitated patients.

Another class of patients in which watchful waiting is justifiable is the bleeder.

On August 11, 1913, I operated upon a young man of twenty-five, upon the third day of a definite attack of appendicitis. A right rectus incision was made, and there was such general oozing that attempt to clip individual vessels was not made, but a piece of gauze was placed either side of the wound and held by retractors. The appendix was retrocaecal. The caecum was lifted into the wound gently with a wet sponge, and immediately there suffused through its walls beneath the serosa a considerable haemorrhage. A few fresh adhesions were broken and an old band clamped and cut. The meso-appendix was clamped and cut. Oozing had been continuous, and by this time, the whole lower quadrant was a pool of blood. This was sponged out, the clamped vessels tied, and a couple of interrupted sutures placed to the mesentery, but still the oozing was smart. However, the gall-bladder, duodenum, and pylorus were palpated. The abdomen was closed in layers, requiring continuous sponging. Everything bled,—every stitch hole was a new bleeding point. Anticipating a haematoma in the wound, a pad of several pieces of gauze was placed firmly against it with several strips of adhesive. The next fourteen hours were uneventful. The following twenty-eight hours were very stormy. During this time, he vomited five times. The vomitus was like that of peritonitis,—thin and dark brown, but expulsive rather than of overflow type. During this time, there were seven movements, some voluntary and some with enemas, all of which contained old blood.

Removal of dressing revealed the incision elevated on a rounded prominence about five inches long, two and one-half inches wide, of purplish-blue color and firm consistency, evidently a massive hematoma. Ecchymosis extended from this into the flanks, and during the next few days downwards onto the penis. He was up and about the room on the twelfth day and discharged on the fourteenth day.

Just before discharge I obtained the following history: About three or four years ago, after the extraction of two or three teeth, bleeding continued for three days despite several trips a day to the dentist. Two years ago he fell on the ice, splitting open the tip of one of his fingers about one-quarter of an inch. This bled for days despite bandaging, and stopped only after suturing. If he cuts himself shaving he may be prevented from going to business.

This case I placed on record as a reminder of this as a serious surgical complication, and as a reminder of what I believe very common negligence,—failure to make inquiry about bleeding in obtaining the history, especially in acute conditions.

The cases in which watchful waiting is justifiable, however, are the exceptional cases. The vast majority had better be operated upon as soon as the diagnosis of appendicitis has been made.

We have all seen fulminating cases in which the time from the first pain to perforation was only a few hours. There is, moreover, no way of predicting what case will subside and what will proceed rapidly to rupture. There is no symptom-complex which will with certainty indicate the amount of injury under which the appendix is laboring; no symptom-complex which will with certainty indicate whether or not rupture is impending.

I recall a well-built, healthy-appearing young man, kindly referred by Dr. Wells of Wakefield. His pain had begun late on the previous afternoon. When seen about eight in the morning, April 27, 1916, he was more comfortable. The belly was perhaps a little distended. There was spasm in the right lower quadrant only upon quick, deep pressure. He did not look seriously ill. He was moved at once to the hospital, and within an hour, he was on the operating table. I found a large appendix, completely gangrenous at the base, the head of the caecum gangrenous, and feces free in the iliac fossa. The appendix was removed, the hole in the caecum trimmed and infolded, and wicks placed to the appendix site and pelvis. A fecal fistula developed, as was expected. The wicks were left in place until a definite sinus was established. The fistula promptly closed, and he left the hospital in one month with a small, granulating wound.

Another experience occurred on a Sunday in June, 1912. At nine a.m. I saw an instructor at Technology for an older surgeon who was out of the city for the day. He was taken with pain on the previous afternoon. He had had a wretched night. I spent two hours trying to locate the surgeon, only to learn that he had gone yachting. I saw the young man again. He did not look like the same patient. He was then desperately ill, with a belly of board-like rigidity. In an hour he had been moved to a hospital. His temperature was only 99, his pulse 140. On opening the belly, no adhesions were found. The bowels were bathed in thin mouse-colored pus. The appendix was half gangrenous. It was quickly removed and drains placed. His convalescence was very slow and complicated by a pyelitis.

These two cases are valuable lessons. I could cite others, and you all could add still other cases. They teach us that "appendicitis is a treacherous disease, that it may be insidious in its manifestations, uncertain in its course, and

liable to sudden changes, which may at any moment put the patient in a condition of extreme peril."

The wider the experience of the surgeon in dealing with appendicitis, the less confidence will he have in formulating any definite conclusions regarding the interpretation of its individual symptoms, and particularly concerning their prognostic value.

It has been often said that the best place for an inflamed appendix is in a bottle, and it may be added that, with but few exceptions, the sooner it is in the bottle, the better.

BIBLIOGRAPHY.

- Heister, Lawrence: Medical, Chirurgical and Anatomical Cases and Observations. London, 1753, Observation cx, p. 136, "of an abscess in the vermiform process of the caecum."
 Mestivier: Observation sur un tumeur située proche la région ombilicale du côté droit, etc. Jour. de Méd., Chir., et Pharm., 1759, x, 441.
 Mélier, F.: Mémoire et observations sur quelques maladies de l'appendice cœcale. Jour. Gén. de Méd., Chir., et Pharm., 1827, vol. 100, pp. 317-345.
 Fitz, Rosalind H.: Perforating Inflammation of the Vermiform Appendix. Am. Jour. Med. Sci., 1886, xcii, 321-346.
 Hall, R. J.: Suppurative Peritonitis due to Ulceration and Suppuration of the Vermiform Appendix; Laparotomy, Resection of the Vermiform Appendix; Toilette of the Peritoneum; Drainage; Recovery. N. Y. Med. Jour., 1886, clii, 662, 663.
 Woodbury, Frank (and Morton, T. G.): Cases of Exploratory Laparotomy Followed by Appropriate Remedial Operation. Trans. Coll. Phys., 1887, ix, 183-193.
 Sando, H. B.: An Account of a Case in which Recovery Took Place after Laparotomy Had Been Performed for Septic Peritonitis Due to a Perforation of the Vermiform Appendix. N. Y. Med. Jour., 1888, xlvii, 197-205.
 Richardson, Maurice H.: Remarks on the Diagnosis Between Acute Appendicitis and Some Atypical Cases of Typhoid Fever. BOSTON MEDICAL AND SURGICAL JOURNAL, 1902, cxlvi, 29-37.
 Remarks on the Diagnosis Between Acute Appendicitis and Acute Intrathoracic Disease. BOSTON MEDICAL AND SURGICAL JOURNAL, 1902, cxlvi, 399, 403.
 The Significance, Pathological and Clinical, of Abdominal Pain. BOSTON MEDICAL AND SURGICAL JOURNAL, 1902, cxlvi, 187-192; 212-225.
 Remarks upon Appendicitis Based upon a Personal Experience of 181 Cases. Am. Jour. of Med. Sci., 1894, cxvii, 1-23.
 Appendicitis. Trans. Am. Surg. Assn., 1899, xvii, 72-98.
 Richardson, Maurice H., and Brewster, C. W. W.: Appendicitis. Remarks Based upon a Personal Experience of 750 Cases; etc. BOSTON MEDICAL AND SURGICAL JOURNAL, 1898, cxxix, 25-28; 53-55.
 Hamilton, Alice: Lead Poisoning in the United States. Kober and Hanson, Diseases of Occupation, and Vocational Hygiene, p. 102.
 Kelly, Howard A.: Appendicitis and Other Diseases of the Vermiform Appendix. Lippincott, 1909.
 Harmer, T. W.: Appendicitis, in a Bleeder. Blood in Vomitus and Stools. Massive Haematoma and Echinosis. Recovery. BOSTON MEDICAL AND SURGICAL JOURNAL, 1914, clxx, 90-92.

Clinical Department.

A LABORATORY AID IN THE DIAGNOSIS OF SCARLET FEVER.*

By D. M. LEWIS, M.D., NEW HAVEN, CONN.,

Epidemiologist to the Board of Health.

DESPITE lack of knowledge of the causative organism of this disease, I have found that cultures from throats may give, frequently, the same aid that we have in diphtheria. Whether any certain streptococcus is the secondary invader or not, I submit the following facts to prove that a certain streptococcus, morphologically, gives reliable data. The accompanying illustration is a camera lucida drawing by Mr. Kellner of the Yale Clinical Laboratory, show-

* Paper read before the Eighth Sanitary Conference of Health Officers of Connecticut.



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CAMERA LUCIDA.

ing in the lower third the usual streptococcus seen in throat cultures, that on the right third the streptococcus that aids us in scarlet fever while that on the left is one that has been of aid in measles. I offer neither name nor other characteristics of this streptococcus, basing its use on pure morphology, a procedure analogous to diphtheria, on the basis of my extended observations.

With unflinching confirmation during a period of ten years that a certain morphological streptococcus in milk sediment work meant garget, irrespective of the number of accompanying pus cells (an experience of upwards of 40,000 milk samples), as contrasted with other forms of streptococci with similar amounts of accompanying pus cells, I became interested in the streptococcus forms in throat cultures and especially in this one I shall term S for convenience. Its infrequency and its presence during the fall and winter gave me the following data over the period mentioned:

October, 1914, of 476 cultures, 11 positive; 2 were later reported cases.
November, 1914, of 790 cultures, 11 positive; 1 was a later reported case.
December, 1914, of 631 cultures, 6 positive.
January, 1915, of 579 cultures, 12 positive.

The following case reports are those previously mentioned:

CASE 1. Female, age 4. Clinical diagnosis was diphtheria, but 2 consecutive cultures show the streptococcus S, and the third day the eruption was present. The clinical course was that of a severe and protracted scarlet fever. The especial interest in the case was that the child had been in the charge of a trained nurse for one week during the absence of the mother and that the child and nurse had been absolutely alone during that time. The previous history of the nurse showed that immediately previously she had been in charge of a scarlet fever patient in a neighboring town; that she

had had a mild sore throat during the last week of attendance on the case, but that the family physician had given her a physical examination as well as the assurance that with a full bichloride bath she would be a perfectly safe individual to care for any well child. A culture at my request was taken from the nurse's throat and showed the streptococcus S. A physical examination showed a sub-acute throat, a strawberry tongue and fairly diffuse body desquamation.

CASE 2. Male, age 14. Clinical diagnosis diphtheria; throat culture streptococcus S. Diagnosis of scarlet fever offered to the attending physician, who two days later on the appearance of the eruption reported it as such. The interest in this case was that it led me back to this boy's chum, a reported case six months previously who, as described in my article on "Control of Scarlet Fever," under Case 2, was responsible also for 2 secondary cases. On both occasions this carrier showed the streptococcus S.

CASE 3. Female, age 18. Patient was seen having a chill at the time of quarantine of reported case of a brother. Throat culture showed pure streptococcus S. Patient later developed the typical signs and was a reported case.

Of even greater value than its use in diagnosis of primary scarlet fever during the past two years have been the data obtained as to carriers. The following cases are illustrative:

CASE 4. Male, age 6. Throat culture during an attack of sore throat in 1914 showed the streptococcus S, and the attending was advised accordingly. At the end of one week I was told that there had been no further evidence of the disease. One year later a culture taken at the time of a tonsillitis and endocarditis showed the same streptococcus. At this time I was told by the family that the boy had had scarlet fever three years previously under the care of another physician. My records showed that with 2 reported cases in males of the same age, both playmates of this boy some two weeks after the initial culture in 1914, that he was an undoubted carrier at that time.

CASE 5. Female, age 20. This case was related at length in my article on "The Control of Scarlet Fever" as Case 8, and is again quoted for the reason that an initial culture of this case admitted as a diphtheria, showed a pure culture of the streptococcus S, leading me to suspect her as a case of scarlet fever rather than the carrier that she proved to be.

Of more importance than mere relation of cases, I wish to show the value of cultures in the study of an epidemic in a neighboring sanatorium that I made in the latter half of 1914. The history of the epidemic in the words of the superintendent is as follows:

CASE 1. A man in the infirmary went to the dentist's July 25th; developed tonsillitis on the 28th. After being ill two days with tonsillitis developed typical scarlet fever rash on the 31st. He had been treated by my assistant, Dr. P. On the 31st Dr. P. developed his initial sore throat, as

did two other patients, a woman in the infirmary and a little girl in the children's ward. At this time within three days we had a total of thirteen cases develop: one, my assistant, one maid from the help's quarters, one from the men's side of the infirmary, two from the women's side of the infirmary, six from the girls' side of the children's pavilion and two from the women's cottages.

Ten days later there were two more from the women's cottage.

Three weeks after the first case developed and about two weeks after the last of the first series, a three-year-old boy in the children's pavilion developed. He had been in close proximity to the girls first affected. At the same time the nurse in charge of the isolation developed symptoms. She had had scarlet fever once before, several years ago.

Three weeks to the day after this and six weeks after the development of the first case, a case developed in one of the men's shacks.

It was at this time that we got you up. You isolated one boy from the children's pavilion whose throat culture proved negative and who never developed any symptoms. You isolated one whose throat culture was positive and who developed well-marked scarlet fever. You isolated one whose throat you reported negative, but who next day had a well-marked rash and typical symptoms. We had, therefore, at this second outbreak one man and the two boys from the children's pavilion.

On examining the patients, you isolated six suspects. In three of these the culture was positive. One of these had been in the Sanatorium since May 14th; a few days after admission had been laid up with a severe follicular tonsillitis. Ever since this time he had had a superficial ulcer at the margin of one of the tonsillar crypts and a slight persisting inflammation of the crypt. He had a tuberculous larynx. His throat was sprayed twice daily and the crypt had been treated from time to time. Two days after your first culture from his throat, I took a second culture, this time direct from the ulcer on the tonsil. This was positive. At the end of two weeks, after having the throat treated with 50% argyrol, and after using trichloroacetic acid a couple of times on the ulcer, we sent another culture to you. This culture was still positive, though that in the other isolated cases was now negative. At the end of three weeks we sent a fourth culture to you, which was negative. We had in the interim continued to treat the ulcer locally with trichloroacetic acid. With the isolation of this case and the two other suspects the epidemic stopped and we have had no further trouble.

Although this epidemic was studied only after some six months of observations on scarlet fever as described in my article on "The Control of Scarlet Fever," I felt secure enough of my grounds to try my procedures out where the usual routine of quarantine and fumigation had failed. With a physical examination of the tongue and throat of every individual on the premises, approximately 150, I took throat cultures from all hyperemic throats, some thirty-five in number, and of this number had those isolated whom I believed might be carriers from the appearance of the tongue as well. Among the children I

found two cases of the disease, isolating as well one boy with a possible scarlet fever throat. Two of the staff members numbered the culture slips and made for themselves a key record of these numbers and the names corresponding. The following day I gave them the record of the numbers which were checked on their list and in turn was given the physical examination I had made the previous day. It will be seen that by the combination of examination and cultures, I had as exact knowledge as I have claimed possible in diphtheria. Cultures proved one of two fresh cases, disproved a possible fresh case, proved three of six suspected carriers. On the strength of the cultures these other suspects with negative throats were freed from isolation.

Based on such evidence as the foregoing, I began the treatment of control of scarlet fever in exactly the same manner as I have described in a previous article, using the appearance of the streptococcus S as a cause for search for either acute cases or carriers depending upon the field investigation. During the year and a half employed, it has proved its value most exactly.

CANCER OCCURRING IN ACID PARTS OF THE BODY.

By A. L. BENEDICT, A.M., M.D., BUFFALO,

Consultant in Digestive Diseases to Columbus Hospital; Attendant, Mercy Hospital; Editor "Buffalo Medical Journal."

SOME years ago I published a statistic article showing the predominance of cancer in parts of the body having an acid secretion or especially liable to acid fermentation. It may be frankly admitted that this was prompted by the theory, somewhat in prominence at the time, that cancer was due to a yeast cell; but the statistics were given for what they were worth, without committing to the acceptance of this theory, and with due regard to the possibility that other conditions, such as mere mass of epithelium or special liability to mechanic and other irritating factors, aside from acidity, existed.

The latest large statistics available are those for the United States for 1914. They apply to the registration area and include malignant tumors in general, the error from the inclusion of sarcoma and the rarer malignant tumors, being small and probably self-neutralizing. Out of a total of 52,420 malignant tumors, the following may be tabulated:

Buccal cavity	2,270
Stomach	12,768

Rectum	2,171
Uterus	7,470
Vagina and vulva	184
Kidneys and suprarenals	538
Prostate	784
Bladder	1,014
Breast	5,423
Skin	1,957
	<hr/>
	34,579

In the case of the uterus and breast, it is obvious that some cancers may be primary in parts not reached by the acid vaginal secretion and perspiration, or foci of fermentation at the nipple. Suprarenal tumors should be subtracted, but are small in number. On the other hand, we have 6,458 tumors of the liver and gall-bladder. Most authorities hold that the great majority of the former are secondary to those of the stomach, and the latter develop in gall-bladders more or less subject to bacterial involvement. Four thousand and fifty-one intestinal cancers are listed. As various critical statistics show that only about 10% of all intestinal cancers develop between the portion subject to irrigation by acid gastric juice and that subject to acid fermentation, it is obvious that this large number must include many belonging in the latter group—indeed, it is obvious at a glance that it is impossible that 2-3 of the total intestinal cancers should lie above the rectum. It is, if anything, an understatement to say that 3,000 of the liver and gall-bladder cancers and 3,000 of the unspecified intestinal cancers should be added to the above table, making the total above 40,000, well above 75% and close to 80%, involving epithelium more or less exposed to some form of acid reaction. Without attempting to promulgate a new theory, this fact is worth consideration, especially in the present uncertain state of our knowledge of the essential nature and cause of cancer.

New Instrument.

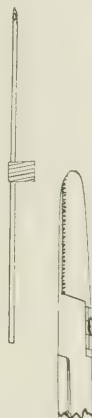
AN IMPROVED VENIPUNCTURE NEEDLE.

By GUY G. FERNALD, M.D., CONCORD, MASS.

THE *Journal of the American Medical Association*, August 26, 1916, p. 1107, presented an illustrated description of the Brandeis needle for venipuncture. It will be found in practice that a slight modification of this needle is an improvement.

The needle consists of a straight steel tube 6 cm. long, provided at about the middle of its length with a tab or flange of braized-on metal. When collecting sera this projecting flange is

seized in a long-handled hemostat or in a needle-holder or other selected lock-handle instrument which, together with the sterile and cotton-stoppered tube, is held firmly in the operator's hand. Ease and competence of grasp and certainty of direction for the needle are insured by this means *provided the metal flange of the needle is correctly corrugated to fit the corrugations of the needle-holder jaws*. With this instrument the uncertainties of venipuncture are practically eliminated.



In operating for the administration of solution intravenously by gravity or other positive pressure methods the same happy results are secured by using a special needle-holder with the jaws adapted to hold securely the female coupling of one's favorite needle. The advantage of any straight needle over any curved device is obvious to experienced operators; the lumen of a curved needle cannot be kept clean and polished by vigorous use of the obturator, while that of the straight needle may be.

Incidentally these needles may be conveniently cleansed and sterilized between punctures by using the obturator consistently after each flushing-out with sterile water and alcohol alternately. Wash bottles with adapted nozzles will serve the purpose. Merely immersing a needle in a solution is much less likely to insure asepsis than is the vigorous flushing and polishing with obturator above indicated.

A simple expedient, by no means in general use, is the overfilling of the veins of the arm on which venipuncture is to be done by having the patient sit or lie and thrust one hand and one arm down vertically while the other is thrust upward in the same direction. When after a few seconds, the tourniquet is applied over the biceps of the dependent arm, the operator has availed himself of the action of a simple law of hydrostatics and has a well plumped-up vein to operate upon.

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THE MEDICAL PROVISIONS OF THE YOUNG BILL.

GOVERNOR McCALL, in opening his Annual Message to the Legislature, devoted an extensive section to Health Insurance, recommending definitely the establishment of a compulsory system of health insurance in this Commonwealth. This recommendation insures the serious consideration of the subject by the Legislature and by the people of this State. In line with the Governor's recommendation, Representative Benjamin Loring Young, of Weston, has introduced a health insurance bill, on the petition of members of a voluntary committee, which has been at work on the matter for some months. Dr. Roger I. Lee of Cambridge, Dr. Wade Wright of Boston being the medical members; Mr. Michael M. Davis, Jr., of the Boston Dispensary, being chairman. The Young bill, of course, entirely supersedes the Doten bill, printed in this JOURNAL on December 7, 1916, and no further study or consideration need be

given to the earlier measure. Physicians and medical societies throughout the State should study carefully the provisions of the Young bill, which is printed on pages 179 to 186 of this issue of the JOURNAL.

Previous to introducing the bill, the local committee had, of course, opportunity to use the drafts made in New York and by the Committee of the Massachusetts Medical Society, as reported in the JOURNAL editorial on January 11; and held many conferences with physicians in Boston and vicinity. The general system of medical organization for the care of the sick under the Young bill is the "panel of physicians." Every physician licensed to practise under the laws of the Commonwealth may enter the panel of his district by registering with the State Commission. Freedom of choice of physicians by patients is guaranteed, subject to the right of physicians to refuse patients on grounds to be specified in regulations under the act. Medical attendance to dependent members of the families of insured persons is included in the Young bill. A provision of the Doten bill, that salaried physicians be allowed, has been modified, evidently in the endeavor to eliminate the evils which might arise from an extension of the salary system. It is provided that the State Commission, with the approval of the Medical Advisory Board, may permit (in combination with the panel system) the employment of legally qualified physicians on salary, provided that freedom of choice by the insured person among salaried and panel physicians be maintained.

In the earlier bill there was a provision for limiting the number of patients which any panel physician might have, to not over one thousand insured persons. The Young bill recognizes the desirability of making such limitations under certain circumstances, and gives power to the Commission, on the recommendation of the Medical Advisory Board, to lay down the maximum number of patients to be allowed a panel physician in any district; but no specified maximum is fixed.

The difficult question of the method of remuneration of panel physicians, on which various suggestions have been made by the Committee of the American Medical Association, the Committee of the Massachusetts Medical Society and others, is dealt with in the Young bill as follows: the funds or societies who carry insurance under the act are to make their arrange-

ments for medical and surgical attendance and treatment with the physicians or associations of physicians, subject always to the approval of the State Commission, which can take action only after the matter has been submitted to the Medical Advisory Board. It is also provided that the payment of panel physicians shall be upon a visitation basis. This, if passed by the Legislature in such form, would eliminate the *per capita* system. No private insurance company may do business under the act, the "funds" being local mutual associations, in the government of which employers and employees have an equal voice.

The State Commission, which is the supreme administrative authority for the health insurance system, is, according to the Young bill, to be of five members, and it is specified that "one shall be a wage-earner, one an employer, and one a physician." The Medical Advisory Board is to consist of eleven members, including the State Commissioner of Health, *ex officio*; the Secretary of the State Board of Registration in Medicine, *ex officio*; and nine physicians, of whom seven are to be chosen by the Massachusetts Medical Society, and two by the Homeopathic Medical Society, their terms to be so adjusted that a certain number go out of office each year. The powers of the State Medical Advisory Board are very important, and the Young bill has enlarged them. All regulations of the Commission relating to physicians and to medical benefits must be referred to the Medical Advisory Board before action by the Commission. Standards for the hospitals and dispensaries, which must provide service under the act, for admission to practise under the act as specialists, for obstetrical care, etc., are to be outlined by the Medical Advisory Board and recommended to the Commission. Power is given to the Commission, after the Medical Advisory Board has passed on the evidence, to discipline a physician, by suspension or removal from practice under the act, this provision following closely the recommendation of the Committee of the Massachusetts Medical Society.

An extremely important feature is the local medical committee which, under the Young bill, is elected by the panel physicians, with representation from the staff of local medical institutions and from the local department of health. This local committee is given a veto power, as well as advisory powers, on medical regulations and questions with which the local funds are

concerned; and the working of such local medical committees should be an essential factor in adjusting suitably the relations of the medical profession to the health insurance system. Provision is made in the Young bill for medical officers who are to pass upon the certificates of disability to work, entitling the insured person to cash benefits, much as outlined in a JOURNAL editorial, January 11 (p. 68). Provision for preventive medicine is made in the Young bill to a greater extent than in any preceding proposal we have seen. The health departments are represented on the governing medical bodies of the State and of each locality. The medical officers, just referred to, may, when directed by the local committees, and under proper supervision by the appropriate public health authorities, carry on preventive or educational work; and the local funds are specifically permitted to be appropriated for preventive measures, the purposes for which these funds shall be expended being subject to the approval of the local or State public health authorities. It is gratifying that so much more detailed consideration has been given, in the Young bill, to the relationship of the medical profession to the proposed health insurance, than was apparent in the bill of last year.

CHICAGO CONFERENCE ON MEDICAL EDUCATION.

THE annual mid-winter conference on medical education, public health and medical licensure will be held in Chicago on Monday and Tuesday of next week, February 5 and 6, under the auspices of the council on medical education and the council on health and public instruction of the American Medical Association, the Federation of State Medical Boards of the United States, and the Association of American Medical Colleges. The morning session on February 5 will be devoted to the subject of medical education, with an address on the problem of higher degrees in medicine, by Dr. Horace D. Arnold of Boston, and a symposium on economy of time in preliminary and medical education. The afternoon session on this day will be devoted to medical licensure, with an opening address by Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, on practical examinations by state licensing boards.

The conference on this day will be opened by Dr. Arthur D. Bevan, and on February 6 by Dr. Frank Billings of Chicago. The morning session of February 6 will be devoted to the subject of public health instruction in medical colleges, with a closing paper by Dr. Milton J. Rosenau of Boston on the training of the public health officer in medical colleges. The afternoon session of this day will consider the subject of state regulation of medical practice. The executive and business sessions of the Federation of State Medical Boards of the United States and of the Association of American Medical Colleges will be held during the forenoon of February 6. A cordial invitation is extended to all members of state medical societies to attend and take part in this important conference.

THE ELIMINATION OF THE RAT.

IN another column of this issue of the JOURNAL is quoted an article by Dr. Edwin H. Brigham, describing the epidemic of bubonic plague which visited Boston in 1798. In this article Dr. Brigham emphasizes also the importance and desirability of the complete elimination of the rat from civilized communities, a work which has been energetically undertaken in Boston by the Women's Municipal League. In this connection, attention should be directed to a monograph about the destruction of the rat, which has been written especially for the League by Dr. Richard H. Creel, assistant surgeon-general of the United States Public Health Service. This monograph, just published by the League, describes the species and prevalence of rats in the United States, their habits, their destructiveness, their danger as disease-transmitters, and the methods of rat destruction and rat proofing. Copies of this monograph may be obtained from the League headquarters at 6 Marlborough Street. The interest of physicians and other readers of the JOURNAL is directed to this important campaign, for which also funds are earnestly solicited by the League.

MEDICAL NOTES.

INTERSTATE MEDICAL JOURNAL.—It is announced that with its issue of January, 1917, the *Interstate Medical Journal*, which has been purchased by the organization controlling the

Modern Hospital, will enter a new era of service to the medical profession. In making this announcement, the *Interstate Journal* asserts a critical policy towards industrial health insurance and other forms of social legislation, which threatened the rights and liberties of the medical profession, and states that it purposes to address itself to the problems involved in such legislation and assist the American profession in the development of a sound, constructive policy with regard to them.

EUROPEAN WAR NOTES.

DEPARTURE OF AMERICAN SURGEONS FOR EUROPE.—On January 20 the following American surgeons sailed from New York City for England aboard the American line steamship *New York* for service in British hospitals and in France: Drs. James V. Ricci of the Rhode Island Hospital, Providence; Jerome F. Potts, Washington, D. C.; William M. Findley, Bellevue Hospital, New York; Frederick A. Simonds, Wakefield; J. Frederick Harvey, Boston; Charles Curtis Allen, Topeka, Kan.; Leo Thomas Kewer, Waverley; Carl Edwin Allison, Wakefield; Charles F. Gormly, Providence; William H. Mackay, Worcester City Hospital, Worcester, and Audley Sanders, Boston.

WOMEN MEDICAL PHYSICIANS IN ITALY.—It is announced that, owing to the shortage of male physicians in Italy, the Italian minister of war has recently called upon Italian women physicians to volunteer for military service. Graduates of over five years' standing will receive the rank of sub-lieutenant, those of between five and fifteen years will receive rank of lieutenant and those of over fifteen years that of captain. Dr. Filomena Corvini has been appointed medical director of the Ninth Italian Army Corps for service at the front.

WAR RELIEF FUNDS.—On Jan. 26 the totals of the principal New England relief funds for the European War reached the following amounts:

French Wounded Fund	\$187,004.77
French Orphanage Fund	77,150.87
British Imperial Fund	74,152.49
Permanent Blind Fund	67,434.19
Surgical Dressings Fund	60,455.12
La Fayette Fund	21,627.03
Star and Garter Fund	507.50

BOSTON AND NEW ENGLAND

PHYSICIANS' CLUB OF WORCESTER.—The Physicians' Club of Worcester was organized on January 4, 1917, at 74 Providence street, Worcester, Mass., and the following officers were elected: President, C. F. Desmond, M.D.; secretary-treasurer, Max Baff, M.D. Members of the board of trustees are G. A. Tripp, M.D., S. A. Bergin, M.D., and J. J. Cummings, M.D. The judiciary committee is composed of J. J. Brennan, M.D.; W. J. Delahanty, M.D.; L. A. Cottle, M.D., and A. H. Lancaster, M.D.

Obituary.

EDWARD MARSHALL BUCKINGHAM, M.D.

Dr. EDWARD MARSHALL BUCKINGHAM died Saturday, Dec. 23, 1916, after a very brief illness, of angina pectoris. He was born in Boston, August 9, 1848, the son of Dr. Charles Edward and Mary Elisabeth Marshall Buckingham. His grandfather was Joseph T. Buckingham of Cambridge, editor of the *Boston Courier* and the *New England Magazine*.

Dr. Buckingham was connected for a time with the class of 1870 of the Institute of Technology, but early transferred his studies to the Harvard Medical School, where he was graduated in 1874. He served as house surgical pupil at the Massachusetts General Hospital, and then studied for a time in Vienna. On his return he became connected with the Boston Dispensary, that institution which has been the initial place of public service for so many Boston physicians. He was subsequently connected as physician with various charities, among them Saint Luke's Home for Convalescents, Gwinn Home for Children, Home for Little Wanderers, and was visiting physician to the Children's Hospital and the Boston City Hospital, and he was long the secretary of the staff of the last-mentioned institution.

His chief medical interest was in diseases of children. He was long an instructor in pediatrics in the Harvard Medical School, and he was for a term the vice-president of the American Pediatric Society and president of the New England Pediatric Society, and this interest formed the basis of many of his contributions to periodical literature. He served his professional brethren at various times as secretary of different organizations, and for twenty years held the responsible position of treasurer of the Massachusetts Medical Society.

In his practice he came very near the ideal family doctor, for he thought of his patient as an individual and in his social relations and not as an isolated case of disease.

Dr. Buckingham was a wise counsellor. No one ever went to him for advice who did not depart with a new view. He was a keen critic: often considered conservative but always receptive of new ideas which he usually received with some modification of his own. He was a most valuable man with whom to "talk things over."

His interest in the world was by no means confined to his profession, but he was a careful student of many social problems. To quote but one: he was deeply interested in transportation problems and studied them deeply. Mountain climbing was one of his earlier pursuits. For many years he spent his summers in the mountains and knew the paths of the Presidential Range and their pioneers and explorers.

He was married on December 14, 1876, to Alice Nason, who survives him. He also leaves two daughters, Miss Edith N., and Mrs. Addison Gulick.

Memorial Resolutions.

MEMORIAL RESOLUTIONS FOR DR. KEANY.

WHEREAS, Francis Joseph Keany, M.D., born in Boston in 1866, educated in the public schools, Boston College and the Harvard Medical School, has recently passed away in the full vigor of life, and

WHEREAS, For nearly twenty years he was an active member of the Board of Trustees of the City Hospital and for some time at the head of the dermatological department, in both of which positions he rendered efficient service, faithful in his professional, as in his administrative duties, and

WHEREAS, During this long period his relations with the staff were harmonious and pleasant. His genial personality and his kindly disposition won him many friends. His freedom from bigotry, his broad, sensible views of the numerous problems constantly arising in an institution of this sort, and his wise conclusions were most commendable. His interest in the work of the staff never flagged. He was ready at all times to confer with them upon all matters pertaining to the welfare of the hospital and its inmates. Being the only physician upon the board of trustees, the staff naturally submitted strictly professional questions to him, feeling that they would receive careful attention. The relations of the staff to the trustees were greatly favored by his wise management of mutual interests. Now, therefore, be it

RESOLVED, That the members of the staff of the Boston City Hospital hereby place upon record their appreciation of the many fine qualities of Dr. Keany, of his long and faithful service to the hospital, of his unfailing loyalty to the patients, the staff and the community, which he served assiduously during his entire professional life.

GEORGE W. GAY, M.D., *Committee*.

Boston, January 1, 1917.

Miscellany.

BUBONIC PLAGUE IN BOSTON.

In the issue of the JOURNAL for October 19, 1916, (Vol. CLXXV, p. 576) we commented editorially on the movement initiated at that time by the Women's Municipal League of Boston for the extensive destruction of rats in this city. The immediate purpose of the movement at that time was not merely hygienic and economic, but had relation particularly to the possible importance of the rat flea in the transmission of poliomyelitis. Whether or no the destruction of rats is of real value in this respect, their eradication would be from every other aspect desirable. They are, of course, the chief spreaders of bubonic plague; and although risk of such an epidemic in Boston is slight, it is never-

theless a possibility. Dr. Edwin H. Brigham, in an article in the *Boston Advertiser* on December 28, 1916, has described as follows the history of a previous epidemic of bubonic plague in this city.

"The statement is made that Boston has never had bubonic plague and therefore is never likely to have it, which is a serious mistake. Aside from the absurdity of thinking that such an epidemic can never occur because there has been none in the past, the fact is that Boston did have bubonic plague, and badly, too.

"The great epidemic of 1798 that spread over Pennsylvania and followed the coast line through New England was called 'yellow fever,' but it had most of the symptoms of bubonic plague. It is to be remembered that at that period, diagnosis was not a well established art, and of course nothing was known of the true cause of disease. Because some corpses turned yellow from disturbances of the liver, it was given this name. Modern knowledge finds otherwise. In descriptions of cases written at the time, we read of the dreadful headaches, pains in back, limbs and loins, restlessness, mental depression, rapid breathing, bleeding from nose and mouth, burning thirst, high temperature, rapid pulse; all these followed by collapse and, in such patients as lived beyond the fifth day sometimes carbuncles and buboes were noticed.

"The outbreak of the disease in all places occurred about the different waterfronts and along the wharves, whence it spread through the cities into the surrounding country. Even at that time it was recognized that the disease was brought by shipping, and many vessels were quarantined, although, of course, no suspicion of the time rested upon the rats that infested the ships of the adjacent wharves and houses. This frightful epidemic practically depopulated Philadelphia with over 70 deaths a day, and the federal capital was removed to Trenton, while the Custom House, which was particularly infested, was abandoned, and the custom officers removed first to the Senate Chamber, and then to Chester. In New York City 40 died a day and so frightened were the inhabitants that the clergy even left their churches and fled into the country. New London suffered heavily and some 300 deaths occurred in Boston, the numerous cases keeping Dr. Warren and his colleagues working day and night.

"So little was known of the treatment for the disease that it was generally fatal, though all endeavors were used. Gen. Washington even sending to Germany for a medicine presumed to be efficacious. The first appearance of the disease in Boston was on July 21, 1798, near the market place, described as 'a low sunken part of the town, the reservoir of every putrid matter, surrounded with docks of stagnant water, filled with offal, and the market house and stalls always well supplied in abundance

with meats, some putrid'—an ideal feeding place for immigrant rats!

"The second case appeared at Codman's wharf, and 'for two or three weeks,' the story goes, 'all cases of the fever were of persons either stationed in or near the market or who often frequented this place.' The epidemic continued until the coming of frost, when it ceased.

"History is said to repeat itself, but I sincerely hope that a true knowledge of the origin and spread of plague in and through rats, will arouse the citizens of Boston to take such measures as to prevent this city from ever suffering such another horrible epidemic."

DECLINE OF POPULATION IN FRANCE.

In a recent issue of the *Revue Scientifique*, Dr. Chambrelent presents a study of still-births in France with reference to the declining population of that country. The ratio of still-to quick-births in the whole of France is 4%. This ratio varies in different parts of the country according to local conditions of environment. In the whole of France the mortality rate per thousand living births is 47; in Paris, 93; in other cities over one hundred thousand inhabitants, 69; in smaller cities, 61; and in towns and cities of less than 30,000 inhabitants, 53. There is considerable difference in the infant mortality of different departments.

"The two central departments of France have the lowest rates, Creuse 25 and Indre 29, and the Bayonne mountainous country in the extreme southwest has the last-named figure. A ring about the central departments has the next lowest figures; the major portion of the country lies within the third group (40 to 50), the next higher group is almost altogether along the mountainous Swiss and German frontiers and the central ranges in Rhone and Ardèche, while the maximum figures are the Seine, Belfort in the Juras and in the southeast, four of the five departments east of the mouth of the Rhone. This is a geographical distribution that seems of interest, the effect of which is not as yet studied. The central, and in general they are rural districts, have the lowest mortality; the mountainous regions within the country, the Cevennes and Auvergues, are higher; while the eastern mountainous borders have a figure even higher than the department that includes Greater Paris. The Pyrenees border makes a better showing than along the Alps.

"For purposes of comparison Dr. Chambrelent introduces the statistics of births according to sex. Males predominate in the ratio of 105 to every 100 females. The geographical distribution of the different figures does not follow such easily determined lines as before, the localities with similar conditions in vital statistics being irregularly scattered over the coun-

try. There is almost an equality of the sexes in Ardèche and a ratio of 108 to 100 in Upper Marne. There are occasional years in individual departments when there are more girls born than boys, but the averages, either of years or of the country, give the male babies somewhat the advantage. On the other hand, the ratio of still-born males to females is very high, running from about 120 to almost 170, the last figure being that of Corsica.

"The demands of the war are very largely for men, and the enormous losses of males in the engagements requires some consideration of conditions in the future. Dr. Chambrelent, therefore, analyzes in medical fashion the conditions surrounding the loss of those born dead or surviving but a short time. His observations, aided by the records of the Baudeloque clinic of about four thousand cases, point to the fact that there may be means of saving a large ratio of those now lost. This, he believes, may be accomplished by prenatal care, by more efficient service at the bedside and a better understanding of conditions, such as the age of the mother, the risk increasing rapidly after the age of twenty-five."

THE YOUNG INDUSTRIAL HEALTH INSURANCE BILL.

AN ACT

To establish a system of compulsory insurance to furnish benefits for employees in case of death, sickness and accident, not covered by workmen's compensation, and for their dependents in case of sickness and accident, and to furnish maternity benefits, and to provide for contributions by employers, employees and the state, and to create the Health Insurance Commission.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

PART I.

SECTION 1. Definitions and Persons Insured. Recognizing that it is necessary to provide proper care for employees during sickness and pecuniary support for themselves and their families during period of inability to work on account of sickness, in order to prevent the spread of disease and to protect the health of the citizens of the commonwealth, and recognizing that modern industrial and social conditions have a part in causing sickness among wage-earners, the general court judges compulsory insurance against sickness to be for the good and welfare of this commonwealth and of the citizens of the same.

SECTION 2. Definitions. When used in this act:—"Commission" means the health insurance commission.

"Fund" means a local or trade fund as the case may be.

"Society" means an approved society; viz: a labor union, a benevolent or fraternal society, or an establishment society, authorized to carry insurance under this act.

"Hospital" includes sanatorium unless otherwise provided.

"Insurance" means health insurance under this act. "Disability" means inability to pursue the usual gainful occupation.

"Employer" means a person, partnership, association, corporation, the legal representative of a deceased employer, or the receiver or trustee of a person, partnership, association or corporation and the state, or a municipal corporation or other political division thereof.

"Home-workers" are persons to whom articles or materials are given out to be made up, cleaned, altered, ornamented, finished or repaired, or adapted for sale, in the worker's own home, or on premises not under the control or management of the employer.

"Earnings" shall include actual expenditures for or reasonable value of board, rent, housing and similar advantages given employees by the employer.

SECTION 3. Compulsory Insurance. Every person employed in the commonwealth, except those receiving regular salaries in excess of one hundred dollars a month, unless exempted under section five of this act, shall be insured in a fund or society as provided in this act.

SECTION 4. Bailment. For the purposes of this act, any person operating a vehicle or vessel for hire, the use of which is obtained under a contract of bailment, in consideration of the payment of a fixed sum or share in the earnings or otherwise, shall be treated as an employed person and the owner of the vehicle or vessel as an employer.

SECTION 5. Persons Exempt. The following persons shall be exempt from the provisions of this act: Employees of the United States;

Employees of the commonwealth or of municipalities for whom adequate provision in time of sickness is already made through legally authorized means;

Inmates of charitable or reformatory institutions when employed for the purposes of the institutions, with or without maintenance, if provision for maintenance and medical attendance during sickness is made;

Casual employees not employed for the purpose of the employer's trade or business;

Members of the family of the employee who are not paid money wages.

SECTION 6. Persons Who May be Exempted. The commission may exempt:—

Home-workers, who, owing to the irregularity of their work or other circumstances connected with their work, cannot for administrative reasons be included in the system of the insurance;

Persons employed for periods of not over one week at temporary employment;

Members of religious societies employed in nursing, educational or other activities of public benefit, who receive no money compensation.

SECTION 7. Voluntary Insurance. Subject to the conditions of this act, the following persons may insure themselves voluntarily:—

Self-employed persons whose earnings do not exceed one hundred dollars a month on an average.

Persons formerly compulsorily insured who, within one year from date on which they cease to be insured, apply for voluntary insurance.

Members of the family of the employer who work in his establishment without wages.

PART II.

BENEFITS.

SECTION 1. Cases in Which Benefits Paid. Benefits as provided in this act shall be paid or furnished in cases of sickness or accident, or of death or disability resulting therefrom, except cases in which any liability or compensation or other benefit is imposed by the workmen's compensation law, or in which liability for damages, compensation or other benefits is imposed by any act of congress.

SECTION 2. Reimbursement of Fund. If benefits in

the form of cash are paid to any person by any fund or society under this act in any case under which liability for compensation exists under the workmen's compensation law, such fund or society shall to the extent of such benefits be entitled to reimbursement out of such compensation, and upon notice to the carrier under the workmen's compensation law the claim for reimbursement shall be a lien upon the compensation. If other benefits are furnished by the fund or society in such case it shall, to the extent of the actual expenses incurred in furnishing such benefits, be subrogated to the right of the employee or of the person furnishing such benefits to reimbursement therefor under the workmen's compensation law. When treatment in such case has been begun by or through a fund or society the care of the case shall not be transferred to the carrier under the workmen's compensation law except upon the request of such carrier.

SECTION 3. *Minimum Benefits.* Every fund or society must provide for its insured members as minimum benefits:—

Medical, surgical, dental and nursing attendance and treatment.

Medicines and medical and surgical supplies.

Sickness benefit to the insured person or the dependent members of his family.

Maternity benefit.

Funeral benefit.

Medical, surgical and nursing attendance, and medicines, and medical and surgical supplies, for dependent members of their families.

SECTION 4. *Beginning of Right.* The right to benefits, with the exception of maternity benefits, begins with the day of membership. The maternity benefit shall be payable to any woman insured against sickness for at least nine months during the twelve months preceding the confinement, to the wife of any man so insured, and, as respects confinement for a child of her husband, to the widow of any man insured for at least nine months during the twelve months preceding his death.

SECTION 5. *Medical, Surgical, Dental and Nursing Attendance and Treatment.* All necessary medical, surgical and nursing attendance and treatment shall be furnished by the fund or society to insured persons and the dependent members of their families, from the first day of sickness or the happening of an accident, provided notice has been given; otherwise from the date of such notice. In case of disability such attendance and treatment shall not be furnished to the same person for more than twenty-six weeks of disability in any consecutive twelve months. All urgently necessary dental services shall be furnished to insured persons, by the fund or society. In case the fund or society is unable to furnish the whole or any part of the benefit provided in this section, it shall pay the cost of such service actually rendered by competent persons at a rate approved by the commission.

SECTION 6. *Medical and Surgical Service.* The fund or society, subject to the approval of the commission, and to the provisions of part five, section seventeen, of this act, shall make arrangements for medical and surgical attendance and treatment by means of either:

1. A panel of physicians to which all legally qualified physicians, surgeons, hospitals, dispensaries and associations of legally qualified physicians and surgeons shall have the right to belong, and from among whom the patients shall have free choice, subject to the right of the physician and surgeon to refuse patients on grounds specified in regulations made under this act; provided that the commission, on the recommendation of the medical advisory board, may limit in the interests of the medical service the maximum number of patients to be allowed a panel physician. Such maximum may vary in different districts. The payment of panel physicians shall be upon a visitation basis.

2. On request of a fund or society, the commission, with the approval of the medical advisory board, may permit in combination with the panel system the employment of legally qualified physicians on salary, provided that freedom of choice by the insured persons among salaried and panel physicians be maintained.

SECTION 7. *Nursing Services.* The fund or society, subject to the approval of the commission, shall make arrangements with nurses, dispensaries, hospitals or nursing organizations, for nursing attendance and treatment.

SECTION 8. *Laboratory Facilities and Specialists.* The fund or society shall provide proper laboratory and other facilities for diagnosis and treatment, and shall make arrangements with specialists, including dentists, for consultations, treatments and operations.

SECTION 9. *Medical and Surgical Supplies.* Insured persons and the dependent members of their families shall be supplied with all necessary medicines, medical and surgical supplies, dressings, eyeglasses, trusses, crutches and similar appliances prescribed by the physician or surgeon. The supplies under this section shall not in any one year exceed fifty dollars for an insured person and the dependent members of his family.

SECTION 10. *Hospital Treatment.* Hospital or sanatorium treatment and maintenance shall be furnished, upon the approval of the medical officer of the fund or society, instead of all other benefits (except as provided in Part II, sections 18, 23 and 28), with the consent of the insured member, or that of his family when it is not practicable to obtain his consent. The fund or society may demand that such treatment be accepted when required by the contagious nature of the disease, or when in the opinion of its medical officer such treatment is imperative for the proper treatment of the disease or for the proper control of the patient. Sickness benefit may be discontinued (except as provided in Part II, section 18) during refusal to submit to hospital or sanatorium treatment. Such treatment shall be furnished during the period for which sickness benefit is payable, and shall be provided in a hospital or sanatorium with which the fund or society has made satisfactory financial arrangements approved by the commission, or in one erected and maintained by the funds and societies with the approval of the commission.

SECTION 11. *Medical Officers.* Each fund or society shall employ at least one medical officer, who shall be a legally qualified physician and possess such other qualifications as the medical advisory board may prescribe. The appointment of a medical officer shall be subject to the approval of the local medical committee, but in case of failure or refusal to approve, appeal may be taken to the medical advisory board, whose decision shall be final. No medical officer shall practice in any other capacity under this act.

SECTION 12. *Duties of Medical Officers.* A medical officer shall make such inspections and reports as the local medical committee shall direct, which reports, if of violation of sanitary laws, ordinances, or regulations, and all other reports required by the health authorities, shall be forwarded by the health officer upon such committee to the proper health authority; and, upon charges of failure or neglect to make such inspections or reports a medical officer may be removed by the arbitration committee after a hearing. The decision of the arbitration committee shall be final.

SECTION 13. *Local Medical Committee.* There shall be in each district formed in accordance with Part IV, Section one, and in which there is a panel, a local medical committee of not less than seven or more than fifteen members. The commissioner of health in each city in which there is a commissioner of health, or local health officer elsewhere, shall serve or shall appoint a member of his staff, who shall be a physician, as a member of the local medical com-

mittee of each district within his jurisdiction. The other members shall be legally qualified physicians and shall be elected for terms of three years, part by the physicians on the panel of the funds in the district, part by the staffs of attending physicians and surgeons of the hospitals which have made agreements with funds in the district, to treat insured persons. The commission, subject to the approval of the medical advisory board, shall determine the proportion of members of the local medical committee to be elected by the panel physicians and by the attending physicians and surgeons of said hospitals. The committee shall elect its own officers and shall serve without compensation.

SECTION 14. Meetings of the Committee. The committee shall meet at least once every month and may be called together at any time on three days' notice by the chairman or by a call signed by five members. A majority of the members of the committee shall constitute a quorum.

SECTION 15. Powers and Duties of the Committee. All regulations and contracts affecting medical, surgical, nursing or dental attendance and treatment made by the board of directors of a fund or society shall be submitted to the local medical committee of its district, and shall not take effect until after the next regular meeting of the committee unless sooner acted upon by the committee, except that the board may issue temporary regulations for the period of three months. Any dispute in regard to such attendance or treatment, or any charge brought against a physician because of his work for a fund or society, shall be referred to the local medical committee of the district before action is taken by the board of directors. If the committee and the board of directors cannot agree, the matter shall be referred to the arbitration committee.

SECTION 16. Arbitration Committee. Any dispute between a fund or society and a physician, or any dispute submitted as provided in Part II, section 15, shall be referred to an arbitration committee, one member appointed by the board of directors of the fund, one member appointed by the local medical committee and a third member, who shall be a chairman, appointed by a judge of the superior court or by a justice of the supreme court in counties in which there is no county court. The decision of the arbitration committee shall be final unless an appeal is taken to the commission within ten days from the date on which the decision is rendered.

SECTION 17. Sickness Benefit. A sickness benefit, equal to two-thirds (66 2-3 per cent.) of the weekly earnings of the insured member, shall be paid beginning with the fourth day of the disability on account of illness or accident. It shall be paid only during continuance of disability, and shall not be paid to the same person for a period of over twenty-six weeks in any consecutive twelve months. This benefit shall be paid to an insured woman when disabled on account of pregnancy, except that it shall not be paid to her during the period when she is receiving cash maternity benefit. The weeks during which sickness benefit is discontinued because of refusal to accept hospital treatment shall be included in computing the period of twenty-six weeks.

SECTION 18. Sickness Benefit to Dependents. A sickness benefit equal to one-half (50 per cent.) of the earnings of the insured member shall be paid to his family, if any, or other dependents, if any, while he is in the hospital or sanatorium, or in any other institution, or while he refuses to submit to treatment.

SECTION 19. Certificate of Disability. A certificate of disability shall be issued only by a medical officer, and only after his personal examination of the patient and upon a statement by the attending physician, if any. Sickness benefits shall be paid only upon a certificate of disability. A medical officer may visit at any time persons recommended for or receiving sickness benefits.

SECTION 20. Computation of Benefits. For the purpose of computing the sickness benefits, weekly earnings shall be taken as the earnings during the last six days on which the employee worked full time preceding disability, not including earnings for overtime, unless such overtime is a regular occurrence in the employment; but if this computation would be unfair to the employee, his weekly earnings shall be taken as six times his average daily earnings for the days actually employed at full time during the three months preceding disability.

SECTION 21. Periods of Payment. Sickness benefits shall be paid weekly where possible, and in no case less frequently than semi-monthly.

SECTION 22. Maternity Benefit. Maternity benefit shall consist of: All necessary medical, surgical, nursing and obstetrical aid, materials and appliances, which shall be given insured women and the wives and widows of insured men.

A weekly maternity benefit, which shall be payable to insured women only, equal to the regular sickness benefit of the insured, for a period of eight weeks, of which at least six shall be subsequent to delivery, on condition that the beneficiary abstain from gainful employment during the period of payment.

Benefits under this section shall be in addition to all other benefits under this act.

SECTION 23. Funeral Benefits. The fund or society shall pay the actual expenses of the funeral and burial of a deceased insured member, as arranged for by the family or next of kin, or in absence of such by the officers of the fund or society, up to the amount of \$100. This benefit shall be paid in case of death of a former insured member within six months after discontinuance of sickness benefits because of the exhaustion of the time limit, provided he has not, within those six months, become insured in another fund or society.

SECTION 24. Assignments and Exemptions. Claims for benefits under this act shall not be assigned, released or commuted, and shall be exempt from all claims of creditors and from levy, execution and attachment or other remedy for recovery or collection of a debt, which exemption may not be waived. Benefits shall be paid only to the person or persons entitled to receive the same, or to some person who is liable by law or in fact for the support of such person or persons.

SECTION 25. Additional Benefits. A fund or society may grant the following additional or increased benefits if the commission be satisfied that its income is sufficient for the purpose.

- (a) Extension of sickness benefit to exceed twenty-six weeks but not to exceed fifty-two weeks.
- (b) Funeral benefits for members of the family.
- (c) Increased amount allowed for medical and surgical supplies and appliances.
- (d) Increase in the period of extended insurance.
- (e) Dental work in addition to that provided under Part II, section 5, either up to a certain amount per year or by contribution of part of the cost.

SECTION 29. Extension of Insurance. When contributions cease on account of unemployment not due to sickness, right to benefit under this act shall continue in force for one week if the insured person has paid contributions during four weeks immediately preceding unemployment, and for an additional week for each additional four weeks of paid-up membership during the twenty-six weeks immediately preceding unemployment.

SECTION 30. Prevention of Disease. Funds or societies, may, with the consent of the commission and for purposes approved by the appropriate local or state public health authorities, make appropriations for prevention of disease and the education of its employer and employee members in disease prevention and hygiene, and include the amount so appropriated among its expenses of administration.

PART III.

CONTRIBUTIONS.

SECTION 1. *Apportionment of contributions.* The full cost of insurance provided by this act, including contributions to the reserve and to the guarantee fund, shall be borne by employers, employees and the commonwealth in the following proportions: employers, two fifths, employees, two fifths, and the commonwealth, one fifth, except as provided in section two.

SECTION 2. *Contributions of low paid workers.* If the earnings of insured persons are less than nine dollars a week the shares of the employer and employee of the amount paid by them jointly shall be in the proportion indicated in the following table:—

IF EARNINGS UNDER	BUT NOT UNDER	EMPLOYER	EMPLOYEES
\$9	\$8	60%	40%
8	7	70%	30%
7	6	80%	20%
6	5	90%	10%
5	—	100%	0

The contribution of the commonwealth shall remain one-fifth of the total.

SECTION 3. *Amount of Contributions.* The amount of the contributions shall be computed so as to be sufficient for the payment of benefits, the expense of administration of the funds and its reserve, and the maintenance of the guarantee fund.

SECTION 4. *Payment of Contributions.* Every employer shall, on the date on which he pays his employees, or at least monthly, pay to any local or trade fund the total contributions due from him and from his employees to such fund. If such contribution is made at such time, he may deduct from the earnings of any employee the share of that employee in the contribution, which shall be in proportion to his earnings, but must inform him, in a method to be approved by the commission, of the amount so deducted. Approved societies shall provide by regulation, to be approved by the commission, for the payment of contributions by their members. The employer of each such member shall be excused from contributing in respect to him to the local or trade fund, as above provided, only upon proof that such contributions to an approved society have been duly made in respect to such member and not otherwise.

SECTION 5. *Rates of Contributions.* In funds in which employees in several industries are insured, contributions may be fixed at different amounts for different industries according to the degree of sickness hazard in those industries, and shall be so fixed if the commission finds a substantial difference in the degree of sickness hazard.

SECTION 6. *Establishments With Excessive Rates of Sickness.* If the establishment of any employer shows an excessive rate of sickness, a fund may, subject to the approval of the commission, increase the rate of contribution of such employer in proportion to the excess of such rate of sickness above the normal rate. Such additional contributions shall be paid by the employer without the right of deducting from the earnings of his employees.

PART IV.

CARRIERS.

SECTION 1. *Division of the Commonwealth into Districts.* The commission shall within six months after this act goes into effect, divide the commonwealth into districts, no one of which shall contain less than five thousand persons subject to compulsory insurance.

SECTION 2. *Establishment of Funds.* The commission shall before April first, nineteen hundred and eighteen, hold one or more hearings in each district, notice of which shall be given by advertisement in at least one newspaper published in the district and by any other method approved by the commission, and shall thereafter establish one or more funds, and

in their discretion may establish one or more trade funds in such district. The commission shall then provide in each district for the election of delegates, half of whom shall be elected by employers, half by employees affected, to conventions for each fund, which shall have power to adopt constitutions. The expense of the elections and conventions shall be paid by the commonwealth as expenses of the commission are paid.

SECTION 3. *Consolidation of Division of District.* The commission at any time on its own motion or on the petition of the board of directors of any local or trade fund may consolidate two or more districts or detach a territory from one district and annex it to another, or create a new district from parts of several districts or from one district, already in existence, and shall make such disposition of the property of the dissolved fund as shall seem to it proper.

SECTION 4. *Establishment of Trade Fund.* On application of employers whose principal place of business or establishments are within the same district, and who employ two hundred and fifty employees in the same trade or branch of trade, or on the application of two hundred and fifty employees employed in the same trade by employers whose principal places of business or establishments are within the same district, the commission, after a hearing within the district, which shall be duly advertised and notice of which shall be sent to the boards of directors of the local and trade funds within the district, may authorize the formation of a trade fund, if there be no other trade fund within the district, for the trade or the branch of the trade, and if the establishment of the new fund will not impair the solvency of any local or trade fund in the district. The new fund shall receive a proportionate share, to be determined by the commission, of the reserve and other property of each fund to which any of its insured members belong at the time of becoming members of the new fund.

SECTION 5. *Temporary Establishment Society.* If a sufficient number of employees are employed temporarily, the commission, of its own motion, or on the application of the board of directors of any fund affected, may order the creation of an establishment society for the duration of the work. The commission shall divide any surplus left in such fund between the employers and employees in proportion to the amount of their contribution after having provided for all the obligations of the fund.

SECTION 6. *Authorization by Commission.* No fund shall begin business until it is authorized by the commission. The commission shall authorize a fund only after approval and filing of its constitution and after the names and addresses of the board of directors elected for the first year have been filed with the commission.

SECTION 7. *Dissolution of Fund.* The commission may, after a hearing in the district for which a fund is established, withdraw its approval and dissolve the fund.

If rendered necessary by the consolidation or division of a district.

If the number of insured members is so small as to endanger the solvency of the fund.

Upon the petition of a majority of the board of directors or of the committee.

The assets and property of a dissolved fund, after provisions for benefits and for the payment of its obligations, shall be divided among the funds and societies which its former insured members join, in such proportions as the commission may determine.

SECTION 8. *Continuance of Existence of Dissolved Fund.* A dissolved fund shall, nevertheless, continue in existence for the purpose of paying any existing obligations, disposing of, collecting and distributing its assets, and doing all other acts required in order to adjust and wind up its business affairs, and may sue and be sued for any of the purposes of this section.

SECTION 9. *Powers of Funds.* Funds shall be corporations and shall have all the power necessary to carry out their duties under this act, including the power to verify by audit pay rolls of employer members for the purpose of determining contributions for which employer members are liable.

SECTION 10. *Constitution of Fund.* Subject to the provisions of this act, the constitution of a fund shall contain:—

Name of the fund and location of its principal office.

If the fund is a trade fund, designation of the trade or trades for which it is created.

Maximum percentages of earnings as provided in sections 30 and 31 of Part IV of this act, at which the regular contribution of employer and employee may be fixed; which maximum, inclusive of the contribution of the commonwealth, shall not exceed four per cent. of such total, except with the approval of the commission, and shall in no case exceed six per cent. of such total.

Nature and amount of benefits and length of time during which they shall be given.

Manner of election, number, power, duties and time of meeting of all committees.

Number, powers, duties and time of meeting of the board of directors.

Method of amendment of constitution, and such other provisions as may be directed by the commission.

SECTION 11. *Committee of the Fund.* There shall be a committee of each fund which shall consist of not less than twenty and not more than one hundred members, to be elected in the manner provided in the constitution, one half by the employer members of the fund, one half by the employee members. The committee shall cause an audit of the accounts of the fund to be made each year and shall pass upon the same and upon the annual report and budget of the board of directors.

SECTION 12. *Employers' Votes.* Each employer member shall have as many votes for employer members of the committee as he employs workmen subject to the insurance who are members of the fund, except that no one employer shall have more than forty per cent. of the total votes unless otherwise provided in the constitution.

SECTION 13. *Board of Directors.* The board of directors shall consist of an even number of directors, not less than eight and not more than eighteen, one half of whom shall be elected by employer members of the committee and one-half by employee members of the committee, and in addition one director who shall be chosen for a term of three years by a majority vote of the directors so elected. No one shall be a member of the committee and a director at the same time and all directors must be citizens of the United States, and a majority of both employer and employee directors must be residents of the commonwealth. The directors elected by the members of the committee shall be elected for three years, but the directors first elected shall by lot be divided into classes so that as nearly as possible an equal number shall go out of office each year. The compensation of the members of the board shall be not more than five dollars a day for each day of attendance upon the meetings of the board. No director shall hold any other office under this act.

SECTION 14. *Removal of Directors.* If a board of directors violate or fail to comply with this act, the commission may, after a public hearing, remove the directors, appoint temporary directors, and call a meeting of the committee to elect directors to fill the unexpired terms of the directors removed. The directors appointed by the commission shall serve until the directors thereafter elected by the committee qualify.

SECTION 15. *Appointment of Directors by Commission.* If at any time the number of directors be not sufficient to carry on the affairs of the fund, and if

after notice from the commission, the committee fail to elect directors, the commission may appoint directors who shall serve until those thereafter elected by the committee qualify.

SECTION 16. *Powers of the Board.* The board shall—

Fill vacancies in its own number for unexpired terms: provided, that only employers' representatives shall vote for employer directors, and only employees' representatives for employee directors.

Appoint all officers and employees of the fund and fix their salaries.

Elect a president and secretary from their own number.

Make regulations necessary for carrying out the purposes of the fund.

Make contracts with physicians, nurses, hospitals, dispensaries, pharmacists, institutions and associations, and any other persons necessary for the business of the fund.

Prepare and submit to the committee annually a financial account and a report for the past year and a budget for the ensuing year.

Represent the fund and direct and administer its affairs, except as otherwise specified in this act.

SECTION 17. *Officers' Bonds.* All officers of a fund who are intrusted with its moneys shall be bonded for amounts to be determined by the board of directors with the approval of the commission.

SECTION 18. *Reserve.* Every fund shall accumulate a reserve. The board of directors shall transfer to such reserve one twentieth of the annual income of the fund until such reserve is equal to one sixth of the total expenditures for the preceding three years.

SECTION 19. *Membership in Fund.* Every person subject to insurance shall, by virtue of this act and without regard to his physical condition, be an insured member of the trade fund of the trade at which and in the district in which he is employed, or if there be no such fund, of such local fund of the district, as provided by the regulations of the commissions, provided that while he is a member of an approved society he shall be excluded by the board of directors from membership in a fund. The commission shall provide by regulation for the case of persons regularly occupied at one trade but temporarily employed at another. Membership in a local or trade fund shall cease as soon as the insured person becomes a member of another local or trade fund. Every employer shall by virtue of this act be an employer of all funds of which any of his employees are members.

SECTION 20. *Membership in Societies.* A person subject to insurance shall become a member of an establishment society on the day of entering employment in the establishment, and shall, except as otherwise provided by law or in the constitution or by-laws, cease to be such member on quitting employment in the establishment.

Of a labor union or a benevolent or fraternal society on being accepted by it, and shall cease to be such member on his resignation or expulsion, except as otherwise provided by law or in the constitution or by-laws.

SECTION 21. *Membership During Disability.* Insured membership shall continue during receipt of sickness or cash maternity benefits or hospital treatment or during discontinuance of sickness benefit, because of refusal to accept hospital treatment, except that no such insured member shall have a vote or be included in the number of insured members on which the vote of any employer member is based.

SECTION 22. *Residents Without the District.* If an insured person reside in the commonwealth, but temporarily or permanently outside of the district of the fund of which he is a member, the trade fund of the same trade, or if there be none the local fund in the district in which he resides, shall supply the minimum benefits provided in this act and shall be reim-

bursed by the fund of which the insured person is a member. Other benefits shall be paid in cash if not provided for by agreements between funds or otherwise. The commission shall provide by regulation for insured persons residing permanently or temporarily without the commonwealth.

SECTION 23. *Determination of District of Employment.* The district in which the establishment in which an insured person is employed, or if he be not employed in an establishment, the district in which the principal place of business of the employer is located, shall be, for the purpose of this act, the district of employment, but the commission may, for the convenience of administration either permanently or temporarily establish as such district that in which the insured member is actually employed or in which his wages are paid.

SECTION 24. *Voluntary Insurance.* A person entitled to voluntary insurance must be admitted on application to membership in the trade fund of his trade in the district in which he is employed, or if there be no such fund, then in such local fund of the district as is provided by the regulations of the commission; provided, that, except for persons who have been compulsorily insured persons within one month, the by-laws, of any fund may prohibit the admission to voluntary insurance of a person who has not passed a satisfactory medical examination by its medical officers. The contribution and benefits shall—

(1) Be based upon such an amount of earnings, in the case of a person formerly compulsorily insured, not exceeding the earnings upon which his contributions and benefits were based immediately preceding the date upon which he ceased to be so insured, and in the case of other voluntary members upon not more than actual earnings, nor more than one hundred dollars per month, as the member may elect.

(2) Be the same as for a compulsory member of the same trade. The full contribution in the case of a voluntary member shall be borne by the member and the state in the following proportion; the member four-fifths and the state, one-fifth.

SECTION 25. *Loss of Voluntary Membership.* A person voluntarily insured shall lose his membership if he acquires membership, either voluntary or compulsory, in another fund or society, or if he be in arrears for one month in the payment of his contributions, unless this period be extended by the fund or society.

SECTION 26. *Fines and Penalties.* Funds and societies may fine their employer and insured members and suspend insured members from benefits for violation of their rules or regulations or for fraudulent representations made with the intent of securing or aiding another to secure benefits, in accordance with rules approved by the commission providing for and limiting such fines or suspension, but contributions will in every case be required in respect of each suspended member. If an employer fail or refuses to pay any contribution due to a fund under this act, the fund to which the contribution is due may recover from such employer the whole amount of such contribution due from such employer, and his employees, with interest at six per cent. by suit in a court of competent jurisdiction, and the employer shall not be entitled to deduct any part of such sum from the earnings of his employee or employees.

SECTION 27. *Approved Societies.* A labor union, a benevolent or fraternal society or an establishment society shall be approved by the commission only after hearing the local or trade funds affected and only if:

It is not carried on for profit; but reasonable salaries paid officials shall not be considered profit.

It is under the absolute control of the insured members in so far as the insurance regulated by this law is affected, except that the employer may appoint one half of the governing body of an establishment society.

It shall satisfy the commission it is in a sound financial condition.

It grants at least the minimum benefits provided in this act.

It has a membership of at least five hundred persons insured for at least the minimum benefits provided under this act or their equivalent, except that in the case of establishment societies in which the employer satisfactorily guarantees the payment of benefits, the minimum number of members may be determined by the commission.

Its operation will not, in the opinion of the commission, endanger the existence of any local or trade fund.

In case of an establishment society, a majority of the employees subject to insurance request approval, and the employer's contribution be at least equal to that of all the employees.

The approval of the commission may be withdrawn at any time upon its finding, after hearing the society affected, that any of the required conditions are no longer satisfied. The commission may, after a hearing, permit an establishment society to accept as members on conditions satisfactory to the commission, all persons subject to insurance in its district.

SECTION 28. *Employers' Contributions.* The commission shall assess upon every employer any of whose employees are insured in an approved society other than an establishment society, a sum equivalent to the employer's contributions had such employees been members of funds. This sum shall be paid in monthly installments into the guarantee fund established by the commission.

SECTION 29. *Contributions of the Commonwealth.* The commonwealth shall contribute to every approved society, one fifth of its total expense for health insurance under this act, subject to the provisions of Section nine, of Part V of this act.

SECTION 30. *Wage Groups.* A fund or society may, with the approval of the commission, divide its members into wage classes, and fix the rates of sickness and maternity benefits and the rate of contributions in each class.

SECTION 31. *Basis of Contribution and Benefits.* A fund or society may, for the purpose of calculating benefits and contributions under this act, estimate the average earnings in any employment or grade or branch thereof, and on the approval of the commission the average so determined shall form the basis for the calculation of such benefits and contributions.

SECTION 32. *Property of the Fund Tax Free.* The property of a fund, and such part of the property of any approved society as is used for the purposes of this act, shall be exempt from all commonwealth, municipal or local taxes.

SECTION 33. *Contributions a Preferred Claim.* Contributions due and unpaid shall have the same preference or lien, without limit of amount, against the assets of the employer as is now or hereafter may be allowed by law for a claim for unpaid wages for labor.

SECTION 34. *Health Insurance Union.* Two or more funds or societies may combine for the administration of the medical benefit, subject to the approval of the commission. The commission may, after notice to and hearing of the parties in interest, withdraw its approval and dissolve the union, making such disposition of its property as may seem to it in the best interests of the insured.

PART V. COMMISSION.

SECTION 1. *Health Insurance Commission.* The health insurance commission is hereby created, consisting of five commissioners, to be appointed by the governor, one of whom shall be designated by the governor as chairman. Of the five members, one shall be a wage-earner, one an employer, and one a physician. The term of office of members of the commission shall be five years, except that the first members thereof shall be appointed for such terms that

the term of one member shall expire on January first, nineteen hundred and nineteen, and one on January first of each of the four succeeding years. Each commissioner shall devote his entire time to the duties of his office, and shall not hold any position of trust or profit, or engage in any occupation or business interfering with or inconsistent with his duties as commissioner, or serve on or under any committee of a political party. The commission shall have an official seal which shall be judicially noticed.

SECTION 2. *Secretary.* The commission shall appoint and may remove a secretary, at an annual salary of three thousand six hundred dollars. The secretary shall perform such duties in connection with the meetings of the commission, and its investigations, hearings, and the preparation of rules and regulations under the provisions of this act, as the commission may prescribe.

SECTION 3. *Officers and Employees.* The commission may appoint such officers, other assistants and employees as may be necessary for the exercise of its powers and the performance of its duties under the provisions of this act, all of whom shall be in the competitive class of the classified civil service; and the commission shall prescribe their duties and fix their salaries, which shall not exceed in the aggregate the amount annually appropriated by the legislature for that purpose.

SECTION 4. *Salaries and Expenses.* The chairman of the commission shall receive an annual salary of four thousand, five hundred dollars, and each other commissioner an annual salary of four thousand dollars.

The commissioners and their subordinates shall be entitled to their actual and necessary expenses while travelling on the business of the commission. The salaries and compensation of the subordinates and all other expenses of the commission shall be paid out of the treasury of the commonwealth upon vouchers signed by the chairman or one of the commissioners designated by him for that purpose.

SECTION 5. *Offices.* The commission shall have its main offices in the City of Boston and may establish and maintain branch offices in other cities of the commonwealth as it may deem advisable. Branch offices shall, subject to the supervision and direction of the commission, be in immediate charge of such officials or employees as it shall designate.

SECTION 6. *Powers of Individual Commissioners.* Any investigation, inquiry or hearing which the commission is authorized to hold or undertake may be held or undertaken by or before any commissioner, and the award, decision or order of a commissioner, when approved and confirmed by the commission and ordered filed in its office, shall be deemed to be the award, decision or order of the commission. Each commissioner shall, for the purpose of this act, have power to administer oaths, certify to official acts, take depositions, issue subpoenas, and compel the attendance of witnesses and the production of books, accounts, papers, records, documents and testimony.

SECTION 7. *Powers of Commission.* The commission may adopt all reasonable rules and regulations and do all things necessary to put into effect the provisions of this act. The commission shall, upon presentation of evidence, which shall have been previously presented to the medical advisory board, that any physician, surgeon, dentist or nurse, practising under the act, is incompetent, neglectful of his duty and dishonest, be empowered to suspend or debar such physician, surgeon, dentist or nurse from practice under the act, and the decision of the commission shall be final.

SECTION 8. *Payment of Commonwealth Contributions.* The commission shall estimate the contribution of the commonwealth annually before the first day of January of each year and shall, before that date, apportion it among the funds and societies, in proportion to their estimated expenditures for the purposes of this act during the year, and shall notify the treasurer of the commonwealth of the sum to be

paid on March thirty-first, June thirtieth, September thirtieth, and December thirty-first of the current year to each fund and society. The treasurer shall pay the amount out of the unexpended balance of any appropriation in his hands for the purpose.

SECTION 9. *Guarantee Fund.* The commission shall reserve ten per cent. of the contributions of the commonwealth to the funds and societies and pay it into a fund to be known as the guarantee fund, from which it may contribute for the relief of any fund or society on the application of its board of directors after investigation by the commission. A contribution shall be made only where, in the judgment of the commission, the necessity arises from the epidemic, catastrophe or other unusual conditions, and shall never be made where, in the opinion of the commission, the deficit is due to failure or refusal of the directors to levy proper rates of contribution. When and so long as in the opinion of the commission the guarantee fund is sufficient, the commission shall make no reservation for this purpose.

SECTION 10. *Treasurer of the Commonwealth Custodian of Fund.* The treasurer of the commonwealth shall be the custodian of the guarantee fund, and all disbursements therefrom shall be paid by him upon vouchers authorized by the commission and signed by the chairman or another member designated by him in writing. The treasurer of the commonwealth shall give a separate and additional bond in amount to be fixed by the governor and with securities approved by the auditor of the commonwealth conditioned for the faithful performance of his duty as custodian of the guarantee fund. The treasurer of the commonwealth may deposit any portion of the fund not needed for immediate use in the manner and subject to all the provisions of law respecting the deposit of other commonwealth funds by him. Interest earned by such portion of the guarantee fund deposited by the treasurer of the commonwealth shall be collected by him and placed to the credit of the fund.

SECTION 11. *Report of Commission.* Annually on or before the first day of February, the commission shall make a report to the governor, which he shall lay before the legislature, which shall include a statement of the apportionment of the contribution of the commonwealth statistics of sickness experience under this act, a detailed statement of the expense of the commission, the condition of the guarantee fund, together with any other matter which the commission deem proper to report, including any recommendations it may desire to make.

SECTION 12. *Health Insurance Council.* The health insurance council shall consist of twelve members, six of whom shall be elected by employer directors and six by employee directors of the local and trade funds; their term of office shall be two years, except that in the first election three of the employer and three of the employee members of the council shall be elected for one year; they shall receive a compensation of five dollars a day for each day spent on the business of the council, and shall be reimbursed for reasonable expenses incurred in connection with such business, to be paid as other expenses of the commission are paid.

SECTION 13. *Officers of Council.* The council shall elect a president from its own number; the secretary of the commission shall act as secretary of the council.

SECTION 14. *Meeting of Council.* The council shall meet during the first week of January, or April, or July, of September, each year. Special meetings shall be called by the president on the request of at least five members of the council or of two members of the commission, at any time.

SECTION 15. *Duties of Council.* The annual report and recommendations of the commission shall be laid before the January meeting of the council before transmission to the governor, and the council may approve them or make a separate report and recommendations to the governor. All general regulations proposed by the commission shall be laid before the

council at a regular or special meeting for discussion before final adoption, except in cases of urgency, to be determined by the commission, and in this case the regulation shall be laid before the next regular meeting of the council or a special meeting for the purpose.

SECTION 16. *Medical Advisory Board.* There shall be a medical advisory board of eleven members. The commissioner of health of the commonwealth and the secretary of the State Board of Registration in Medicine shall be ex-officio members of the board, seven members shall be chosen by the Medical Society of the State, and two by the Homeopathic Medical Society of the State. The term of office of chosen members shall be three years, except that the members first chosen shall choose by lot three of their number to go out of office at the end of one year and three at the end of two years. The board shall elect its own chairman and other officers. Its members shall be paid necessary expenses, but no salaries.

SECTION 17. *Powers of Medical Advisory Board.* All regulations of the commission relating to physicians and to medical benefits shall be referred to the medical advisory board and shall not be approved by the commission until after the first regular meeting of the board after such reference, unless sooner acted upon by the board, except in case of an emergency, when the commission may issue a temporary regulation for a period of not over six months. The medical advisory board shall make recommendations to the commission on standards for the hospitals and dispensaries which provide service under the act; for admission to practice under the act as specialists; and for obstetrical care. Such recommendations of the medical advisory board shall be effective on approval by the commission.

SECTION 18. *Meetings of the Medical Advisory Board.* The board shall meet at least once every three months and may be called together at any time on one week's notice by the chairman or by a call signed by any five members or by the commission. A majority of the members of the board shall constitute a quorum.

SECTION 19. *Settlement of Disputes.* All disputes arising under the act shall be determined by the commission either on appeal or, in case of disputes between funds and societies, by original proceedings. The commission may assign any dispute except disputes in regard to medical benefit, for hearing and determination to a dispute committee composed of one employer and one employee member of the council, and a member of the commission, as chairman, the members of the council to serve in turn on the dispute committee for periods of one month. Either party may appeal to the commission from the decision of the dispute committee within thirty days from the date of rendering the decision.

SECTION 20. *Medical Disputes.* All disputes regarding medical benefit, which have been appealed to the commission, shall be referred by the commission to the medical advisory board, which shall report to the commission, and the commission shall not decide any such dispute until after a report has been made by the board.

SECTION 21. *Nurses' Advisory Board.* The State Nurses' Association shall choose a Nurses' Advisory Board, of seven members, which shall be advisory to the commission on all matters relating to nursing service.

SECTION 22. *Suits at Law.* Suits shall not be brought in any court on any matter on which an appeal is allowed to the commission until after a decision by the commission, or of a dispute committee, and the statutes of limitations shall not begin to run in such cases until after the decision is filed.

PART VI.

MISCELLANEOUS PROVISIONS.

SECTION 1. *Limitations of Claims.* No claim for benefit shall be valid unless made to the board of

directors of the proper fund or society within one year from the time when the benefit was due.

SECTION 2. *Disclosure Prohibited.* Information acquired by the commission or a fund, or any of their officers or employees, from employers or employees pursuant to this act, shall not be opened to public inspection, and any such officer or employee who, without authority of the commission or pursuant to its rules, or as otherwise acquired by law, shall disclose the same, shall be guilty of a misdemeanor.

SECTION 3. *Unauthorized Deductions from Wages Prohibited.* An employer shall not deduct from the wages or salary of an employee any part of any contribution required to be borne by the employer, or make any agreement with the employee for the repayment of any part of such contribution. Any employer who violates this section is guilty of a misdemeanor and upon conviction shall be punished by a fine of not more than ten dollars. Every deduction or repayment in the case of each employee shall constitute a separate violation.

SECTION 4. *Penalties.* Any person who:

1. Prevents or obstructs the audit of a payroll, as authorized by this act;

2. Knowingly makes any false statement or false representation for the purpose of obtaining any benefit or payment, under this act, either for himself or any other person; or

3. Wilfully violates or fails to comply with this act or any regulation or order made by the commission;

is guilty of a misdemeanor.

SECTION 5. *Technical Rules of Evidence or Procedure Not Required.* The commissioner or a deputy commissioner or dispute committee, in making an investigation or inquiry or conducting a hearing, shall not be bound by common law or statutory rules of evidence or by technical or formal rules of procedure, except as provided by this act, but may make such investigation or inquiry or conduct such hearing in such manner as to ascertain the substantial rights of the parties.

SECTION 6. *When to Take Effect.* This act shall take effect immediately, except that the provisions as to the payment of contributions shall not take effect until April first, nineteen hundred and eighteen, and the first payment of contributions by the commonwealth shall not be made until June thirtieth, nineteen hundred and eighteen; the provisions as to the benefits shall not take effect until July thirty-first, nineteen hundred and eighteen; provided, that if a fund or society is authorized after January first, nineteen hundred and eighteen, the provisions as to the benefits shall not take effect until three months after authorization.

Correspondence.

THE ANTI-VACCINATION CAMPAIGN.

Worcester, Jan. 25, 1917.

Mr. Editor: Let no one underestimate the vigor of the anti-vaccination campaign.

To every legislator has been mailed a yellow sheet entitled "Why compulsory vaccination" and this sheet and a report of the anti-vaccination side of the legislative hearing of last year have been distributed in at least one convention of women.

I call on every member of the Massachusetts Medical Society to impress upon his member of the legislature the importance of retaining upon the statute books the requirements for vaccination of public school children, which protects and practically renders immune so many thousands of those who, unprotected, would be the first to suffer in a smallpox epidemic.

Very sincerely yours,

SAMUEL B. WOODWARD, M.D.,

President Massachusetts Medical Society.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

February 8, 1917

ADDRESS

THE PRINCIPLES UNDERLYING THE SURGERY OF THE PANCREAS. By John B. Deaver, M.D., Philadelphia.....	187
--	-----

ORIGINAL ARTICLES

THE SENSORY EVIDENCE OF NERVE REGENERATION. By Isador H. Coriat, M.D., Boston.....	192
POSSIBILITIES IN SOCIAL SERVICE FOR PSYCHOPATHIC PATIENTS By Mary C. Jarrett, Boston.....	201
INHERITY FROM A MEDICAL VIEWPOINT. By Isaac H. Sch., M.D., Norfolk, Mass.....	204
THE FRAMINGHAM HEALTH AND TUBERCULOSIS DEMONSTRATION. By D. B. Armstrong, M.D., Framingham, Mass.....	206

THERAPEUTIC AND PREVENTIVE MEDICINE

THE DRUG TREATMENT OF MORPHINISM. By Frank H. Carleton, M.D., Norfolk, Mass.....	209
--	-----

CLINICAL DEPARTMENT

REPORT OF A CASE OF CONGENITAL ALBEMELIA. By J. Harper Blaisdell, M.D., and J. R. Cunningham, M.D., Boston.....	210
---	-----

BOOK REVIEWS

The Harvard Medical School and Its Clinical Opportunities. By Leroy E. Parkins, A.B.....	211
The Practice of Urology. By Charles H. Chetwood, M.D.....	211

EDITORIALS

MEDICAL EXPLOITATION OF THE IMMIGRANT.....	212
SUDHOFF'S COPENHAGEN CODEX.....	213
EXTENSION COURSES OF THE HARVARD MEDICAL SCHOOL.....	213
THE PERIL OF SMALLPOX.....	214
MEDICAL NOTES.....	214

MEMORIAL RESOLUTIONS

MEMORIAL RESOLUTIONS FOR EDWARD M. BUCKINGHAM, M.D.....	218
MEMORIAL RESOLUTIONS FOR CHARLES F. WITHERINGTON, M.D.....	218

CORRESPONDENCE

THE TREATMENT OF IMPACTED HIP FRACTURES. Royal Whitman, M.D.....	219
LONDON WAR HOSPITALS. Henry Vickers.....	222
PENNSYLVANIA CONFERENCE OF PHYSICIANS. John Price Jackson.....	224

MISCELLANY

MASSACHUSETTS STATE DEPARTMENT OF HEALTH. RESUME OF COMMUNICABLE DISEASES.....	218
NOTICES, RECENT DEATHS, ETC.....	224

Address.

THE PRINCIPLES UNDERLYING THE SURGERY OF THE PANCREAS.*

By JOHN B. DEAVER, M.D., PHILADELPHIA.

"THERE is an immense amount of sepsis in medicine." These words of an eminent clinician convey an appreciation of the preponderating rôle played by infection in the production of pathology. The effects of infection are often obscure and far reaching, for they are indirect as well as direct, manifesting themselves at a distance as well as at the primary site, revealing their ravages at a time remote as well as immediately, and it is not too much to say that if we could attain the ambitious ideal of Pasteur of causing all the infectious diseases to disappear from the earth, that along with the so-called infectious diseases would go such a large proportion of diseased conditions, now but little considered in this connection, that our works on pathology could be condensed into the size of a primer and our occupation would be all but gone.

"Still, it is our chief task to unravel the devious ways of infective disorders, since it is only by a thorough understanding of their etiology, clinical course and effects, that we may hope to palliate or cure and ultimately to prevent them. For this reason we offer this brief suggestion as to the origin of certain pancreatic swellings and inflammations."

Barely thirty years ago there was born in this city, which has often served as the cradle of liberty, light and progress, a clinical infant. The great Reginald Fitz was the midwife. Socrates was fond of calling himself a midwife because, he said, he brought other men's ideas into the world. Medicine had been in prolonged travail. Claessen (1842), Ancelet (1866) and Friedreich (1875) had collected and described, as systematically as was then possible, the diseases of the pancreas; Rokitsansky (1863) and Klebs (1869) had described with accuracy certain hemorrhagic conditions of the pancreas found at autopsy. Balser (1882) had published observations on small, opaque white areas in the abdominal fat which he proved to consist of necrotic fat cells and believed to be a cause of death. It remained for Fitz in 1889 with exact observation and creative coördination to discern the significance of these fetal movements and skilfully to deliver the infant entity of pancreatitis. It is not, therefore, without some hesitation that I venture to speak of the growth of this prodigy within the confines of his native heath. And I hasten to confess that his development, which has been a matter of labor and concern for the world at large, has not yet reached the point of maturity or perfection.

The striking lesions of acute pancreatitis and the opportunities of observation in vivo by rapid advances in abdominal surgery led to the accumulation of considerable clinical data. From the animal laboratory there issued numerous contributions dealing with the etiology of acute hemorrhagic pancreatitis. Lesions more

* Read before the Boston Medical Library, in conjunction with the Suffolk District Medical Society, Boston, Nov. 29, 1916.

or less similar to the clinical condition could be produced, it was found, by a variety of methods, such as direct trauma, interference with the blood supply, and the introduction of a variety of substances into the tissues of the pancreas or into its ducts.

Bacteriological investigation, which had yielded such rich results in the explanation of inflammations of other organs, in pancreatitis remains negative or inconclusive.

The first suggestion of a method by which acute pancreatitis could be caused by clinical conditions was made by Opie in 1901. Opie found a small gallstone impacted in the papilla of Vater in a case of acute hemorrhagic pancreatitis. It has been known for many years that the common bile duct and the duct of Wirsung usually open into the ampulla of Vater, and their mingled secretions are poured into the duodenum through the single opening at the summit of the papilla of Vater. Opie showed that in certain cases the arrangement of the ducts was such that the occlusion of the papilla of Vater by a small gallstone would throw the ducts of the pancreas and the liver into direct communication through the medium of the ampulla of Vater. Thus a mechanism was presented for the retrojection of bile into the ducts of the pancreas, and experimentally Flexner and others showed that the effect of the injection of bile into the duct of Wirsung in animals actually caused acute hemorrhagic pancreatitis. It was noted, furthermore, that gallstones were associated with acute pancreatitis in the human subject in a large percentage of cases varying from 42% to 100% in various series reported.

This observation and the stimulus to experimental work to which it gave rise, centered the attention of investigators upon the ducts of the pancreas, and the explanation of the disorders of the organ resolved itself to the very simple one of ascending duct infection or chemical insult due to regurgitated bile or duodenal contents. The substances that have been shown to produce acute hemorrhagic pancreatitis when injected more or less forcibly into the ducts of the pancreas comprise bile, the isolated salts of the bile acids, taurocholic acid and glycocholic acid, various oils, hydrochloric acid and intestinal secretions, intestinal secretions and activated pancreatic juice, commercial trypsin, calcium and sodium chloride, papain, adrenalin, sulphuric acid, chromic acid, formalin, soda, bacterial extracts and still other substances of such extraordinary variety, that no common chemical property is possessed by them. But these were not the only methods by which this extraordinary lesion could be reproduced. Artificial ischemia by pressure or temporary ligation, mass ligation and gross injury to the pancreas, and the injection of occluding substances into the pancreatic vessels such as air, paraffin, wax, lycopodium and oil—all could be made to

cause the typical lesions. Furthermore, it was found, as in an experiment by Sweet, that the typical systemic intoxication, fat necrosis, and death could be produced by inserting into the abdominal cavity of a normal animal a portion of the sterile pancreas removed from a second animal under aseptic precautions. To the syndrome thus produced, the Germans gave the name "pancreasvergiftung" (pancreatic poisoning). It is clear that the essential features common to this condition of acute pancreatitis, do not depend upon the substances or methods shown to produce it either under experimental or clinical conditions, nor yet to the route or method of their application, but to something resident in, and inherent to the pancreas. We have finally reached the point where those most thoroughly acquainted with the development of our knowledge of the subject agree that the most essential features of acute hemorrhagic pancreatitis are due to the digestive activities of the pancreatic ferments themselves. Fat necrosis is merely an evidence in vivo of the fat-splitting property of the ferment lipase. Hemorrhage, gangrene and systemic intoxication are due chiefly to the activities of the proteolytic enzyme trypsin and the absorption of poisonous products of protein change. Now, as the proteolytic ferment exists in the pancreas, only in the form of the inactive protrypsin, which is incapable of acting upon the tissues, the problem becomes one of determining upon what conditions this activation in vivo depends. The retrojection of bile, according to the explanation of Opie, remained the only explanation that squared with clinical conditions. However, not all cases of hemorrhagic pancreatitis are also the subject of gallstones. Polya found that infected bile was more potent in reproducing the disease than sterile bile. Delezenne and Hekma have shown that an activating substance is present in many varieties of bacteria. It is known that simple autolysis of the dead pancreatic tissue is able to activate the contained ferments. Moreover, if gallstones are present in the majority of cases of acute pancreatitis, is it necessary that they act according to the mechanism of Opie, or may they not be the cause of recurring exacerbations of infection which, communicated to the pancreas, may start in motion the hemorrhage, autolysis and ferment activities characteristic of the disease?

Coincident with the more recent work on the acute pancreatic conditions, chronic pancreatitis began to claim the attention of surgeons. The numerous instances of enlargement of the head of the pancreas observed during operation upon the biliary passages soon proved that this association was more than a casual one. Mayo Robson deserves the greatest credit for insisting upon the frequency and importance of the condition. At first the attempt was made to explain the infection of the pancreas by the same method as was then current in connection with

the acute disease, namely, by duct transmission. But it was observed that, as a rule, only the head, and especially the upper portion of the head of the pancreas, was affected. The body and tail usually escaped. It is more than passing strange that a duct-borne infection should involve only a small portion of the duct distribution. Between 1904 and 1907 Bartels published his work on the anatomy of the lymphatics of the pancreas in which he showed the close association of the lymphatics of the duodenum and pancreas. Franke (1911) showed that the lymphatics of the gall-bladder coursed immediately beneath the posterior surface of the upper portion of the head of the pancreas. Deaver and Pfeiffer from clinical observations showed that the course of infection could often be demonstrated *in vivo*, beginning with the gall-bladder which gave rise to lymphangitis and lymphadenitis along the course of the common duct with its accompanying lymphatics in the right free border of the gastro-hepatic omentum and finally peripancreatic lymphangitis and lymphadenitis with swelling and induration of the adjacent portion of the pancreas. Arnsperger suggested that the condition should properly be called pancreatic lymphangitis. Franke finally succeeded in injecting the lymphatics of the upper portion of the head of the pancreas from the gall-bladder.

Here the matter stands. Complete experimental proof as yet is lacking, owing to the complexity of the factors involved, including the varieties of bacteria, the selective affinities and toxicity of each, the general and local individual resistance and certain mechanical factors. But we believe that pancreatitis is, with few exceptions, an infective disorder, propagated in the majority of instances from those frequent foci of upper abdominal infection, the duodenum and the gall-bladder; that the infection arrives usually by way of the lymphatics; that acute pancreatitis is usually infection plus ferment activity, though it may be traumatic or chemical in exceptional cases; that the most common form of chronic pancreatitis, as seen by the surgeon, begins as a pancreatic lymphangitis depending for its origin and often for its continuance upon a primary infected focus in the neighborhood.

These conceptions have a profound influence upon the treatment of both acute and chronic pancreatitis.

Since Fitz called attention to the more striking pictures of pancreatic disease we have learned that here, as elsewhere in the body, disease processes vary greatly in extent, kind and severity. Fitz very properly pointed out that the usual sequence of affairs is hemorrhagic pancreatitis, then gangrene and finally suppuration. We now know that very acute inflammation of the pancreas may be unaccompanied by hemorrhage, or that per contra the hemorrhage may be an initial and profuse affair infiltrating not only the pancreas but also the surrounding

cellular tissues and omenta and staining the fluid exudate which collects within the peritoneal cavity. On the other hand, hemorrhage may be focal, causing one or more spots of hemorrhagic softening in the head or less commonly in the tail of the organ. Suppurative processes may go on without previous hemorrhage or gangrene. I have several times encountered simple purulent collections in the head of the pancreas and Dr. Pfeiffer has related to me a case observed post-mortem in which a small gallstone was found impacted in the summit of the papilla of Vater, the pancreas being the seat of numerous small focal abscesses without evidence of previous hemorrhage and no areas of gangrene. The patient had died suddenly in a medical ward, the chief symptom having been persistent hiccough. Doubtless more upper abdominal seizures than we now suspect are in reality instances of acute pancreatitis of lower grade than the classical hemorrhagic disease.

To understand the procedures which are of use in pancreatic surgery, we must be able to answer several questions: (1) what may we aim and legitimately hope to accomplish by operation? (2) when should we operate? (3) how should we operate?

It is obvious that complete or partial removal of the acutely inflamed pancreas is out of the question. Our measures must therefore be directed at the cause of the condition if it can be discovered and is still capable of acting, and secondly, to come to the relief of the process already inaugurated by instituting appropriate drainage. It is in connection with the first consideration, what may we aim and legitimately hope to accomplish by operation, that our conceptions of the cause of pancreatitis are of the first importance. Acute pancreatitis is one of the most agonizing affections known to mankind. The pain is shocking in intensity and persistent. The toxemia, characteristic of the condition, begins soon to deplete the vital powers of the patient. It is manifestly improper to do more in an operative way than promise to contribute to the immediate recovery. There are cases in which nothing more can be done than rapid section and hasty drainage. These are the forlorn hopes of surgery and these procedures are to be regarded as born of necessity rather than of intelligent choice.

My distinguished friend, our late colleague, Dr. Maurice H. Richardson, made the statement in discussing the subject of acute pancreatitis before the Clinical Congress of Surgeons of North America, that he had never seen a case of acute hemorrhagic pancreatitis recover.

Excluding such moribund risks it becomes necessary to decide whether it is advisable to attack the pancreas alone or to deal also with associated lesions. We have seen in experiment that the pancreas may in a moment receive a lesion that will set up the full train of hemorrhage, gangrene and suppuration, proceeding to a fatal

termination even after the cause has ceased to act and clinical evidence indicates that in the so-called ultra-acute cases we may have a similar state of affairs. These also will usually be the desperate cases in which there is no opportunity for operations of choice. On the other hand, there are cases of less severity in which it can scarcely be of no moment that the etiological factor be unrelieved. In such cases there is time for simple procedures that are not shocking in character, and since the biliary tract, according to our conception, is usually at fault, it is indicated to relieve the gall-bladder or ducts of stones, if present, and to drain if any indication of infection exists whether or not calculus can be detected. We have performed cholecystostomy in 11 cases with 3 deaths, cholecystostomy and choledochostomy in 2 cases, both of whom recovered, and of 3 cases in which the bile tract was untouched two died and one recovered. One case collapsed and died on the table before anything but the abdominal incision had been made. We have not been able to attribute any of the deaths to the operations upon the bile passages. On the contrary, we ascribe to these procedures a beneficial influence particularly in view of the fact that the mortality in this series is lower than that of any series of equal size with which we are familiar. We do not advocate cholecystectomy in this condition because it is more time-consuming and subject to operative difficulties and complications. Moreover, the gall-bladder is the most accessible and satisfactory portion of the biliary tract for drainage which is sufficient in dealing with infections of the bile passages for the time being. We may remark in passing, that recurrences of infections of the bile tract are more common in our experience when the gall-bladder has been simply drained than when it has been removed. But we stick here to our contention of doing no more than will promise immediate results and letting the future take care of itself, on the principle that two operations on a living patient are better than one thorough operation and a dead one. The common duct should be opened only when stones are detected. If opened, a probe should be passed down into the duodenum to insure a patulous condition of the papilla of Vater. But it is inadvisable to open the common duct with the idea that it is necessary to dislodge a fancied stone impacted in the papilla, since this hope as a rule will prove illusive. If the measures just outlined are advisable, it is also certain that the time to operate is at the earliest moment consistent with the condition of the patient as an operative risk. Collective statistics by Körte and others show beyond a doubt the valuable influence of early operation. Nothing but profound shock should warrant delay, and this should be combated by saline infusions, adrenalin and pituitrin in order to bring the patient's condition as speedily as

possible to a point where operation can be endured.

It is not only because of the preventive character of the drainage of the biliary tract that early operation is necessary, but equally or even more so because of the hope of interrupting the extravasation of blood and ferments into the pancreas and the surrounding tissues. There is no doubt that free drainage is a desideratum. When it comes to specifying to what extent the pancreas may be punctured, scarified or incised there is still room for experience to guide us. We do not practice free and indiscriminate incision into the swollen pancreas because of the difficulty of controlling the free hemorrhage that is likely to result. The peritoneum over the organ should be scarified so that gauze drainage may be brought into direct contact with the surface. This also opens up the retro-peritoneal space and aids in preventing accumulations about the pancreas. A few blunt punctures are also serviceable. When a localized point of marked swelling is encountered it is often difficult to elicit fluctuation, but a large aspirating needle on a syringe will detect collections of fluid and these should be opened freely.

If the disease has been allowed to go unoperated for a number of days a peripancreatic collection of considerable size may localize and be perceptible through the parietes. Often such collections form in the lesser omental sac and point in the left loin where they may most advantageously be evacuated. One such case I (J.B.D.) have operated in which the diagnosis was made by Fitz himself. The patient recovered after losing a large portion of his pancreas as a gangrenous slough. He remained well for a time (six years), but eventually died of diabetes, doubtless secondary to the pancreatic disease. Very rarely a similar abscess may originate in the head of the pancreas and point retro-peritoneally in the right loin. We have not met with such a case. Abscesses which present anteriorly rarely adhere to the parietal peritoneum, being covered by one or more viscera or omenta. Such collections must be evacuated transperitoneally. It is sometimes possible and advisable to do this by a two-stage operation, closing off the general cavity before incising the collection. More often evacuation must be done at once, first protecting the peritoneum from soiling, and introducing sufficient drainage.

The sinuses resulting from the drainage of acute pancreatic inflammations are at times very troublesome. The effect of the pancreatic ferments upon tissues is evident in the intense irritation of the skin in contact with the discharge and by the sluggish formation of granulations which are constantly subject to the severe erosive action. A strict antidiabetic diet, as proposed by Wohlgemuth, is of service in reducing the activity of the pancreas, thereby favoring healing. In all cases the skin should be protected at once by a bland, heavy ointment to prevent

contact with the secretions. After excoriation has occurred it is practically impossible to get anything to stick to the moist surface.

Polish woman, married, age 24 years; admitted to the German Hospital, 11-5-16. Was perfectly well until two days before admission, when she was seized with most acute abdominal pain followed by vomiting. Upon admission abdomen greatly distended, rigid and universally tender; tenderness, however, more pronounced two inches above the umbilicus and immediately to the right of the median line.

Tentative Diagnosis. Acute appendicitis with diffuse peritonitis.

Patient sat up in bed, ice to abdomen, and given anatomic and physiologic rest. Improvement gradually ensued until at the end of three days there was restoration of peristalsis as determined by auscultation of abdomen, the patient was not passing gas voluntarily; belly walls relaxing below, but remained rigid above. Two days later an area of dullness extending from mid-line well to the left and downward to the umbilicus. At this time I had a cystoscopic examination with catheterization of the ureters, which proved negative; also x-ray with negative findings, except the presence of a diffuse shadow at the site above mentioned. Diagnosis now pancreatitis with effusion.

Operation. Diffuse fat necrosis. Stomach pushed well up into extreme upper abdomen, gastro-colic omentum between the stomach and transverse colon greatly infiltrated and bulging forward, palpation showed fluctuation at latter point. Incision evacuated large amount of pus and bloody fluid from lesser omental sac. Two long, good-sized rubber drainage tubes introduced into the cavity; the cavity was lightly packed with three pieces of gauze one yard long and a foot wide, each. It is now a week since the operation and patient has had no untoward symptom.

In the ultra-acute cases immediate intervention before the oncoming peritonitis. Acute diffuse peritonitis, the result of ultra-acute pancreatitis presents the worst form of the acute abdomen. In the presence of so desperate a condition I have thought it wise in a few instances to defer operation until the peritonitic process became limited; this has been accomplished by the observance of strict anatomic and physiologic rest, by which we understand the patient occupying the extreme sitting position, absolutely nothing by mouth, salt solution (Murphy method), by bowel, lavage if there is vomiting, as is usually the case, and morphia hypodermically to relieve pain.

In all abdominal conditions I try to give as little morphia as will produce comfort and in as small doses as possible. The abdomen is practically packed in ice. Expressed beef juice and whiskey frequently are added to the saline solution. I may say, strict observance of anatomic and physiologic rest will often be all that is required to produce comfort. I know this opinion is directly antagonistic to that of several eminent surgeons, yet I am so thoroughly convinced of its

correctness that I can make no modification of this rule.

In the milder cases of acute pancreatitis, not seen until the advent of a diffused or very active localizing or localized peritonitis, I take advantage of the great good accomplished by anatomic and physiologic rest until sure as one can be that the process is a limited one. The question arises, does not this favor suppuration, also does it not favor partial resolution and at least some absorption?

Whether we regard chronic infective pancreatitis as a surgical disease will depend upon our acceptance of the general belief that, as a rule, it is secondary to infective disease of associated organs. For there is nothing that we can do in the way of direct attack upon the pancreas that will promise relief. In the cases, relatively rare, of obstruction of the common bile duct by the swollen or indurated pancreas at the point where the duct tunnels the retro-duodenal portion of the head, as it does in two-thirds of all cases, it is manifestly proper to perform a short-circuiting operation in order that the bile may be conducted into the intestine. This is best effected by an anastomosis between the gall bladder and the duodenum. In case of doubt as to the feasibility of this operation the stomach may be used, or failing this, the intestine. If the gall bladder has been removed or is too much diseased the common duct must be implanted into the duodenum. But these are operations not for chronic pancreatitis per se but for the consequences of chronic pancreatitis. When the pancreas has reached the stage of induration with deposits of fibrous tissue between the acini or lobules, with atrophy of the parenchyma, cure is no more to be thought of than in contracted kidney. The damage is done and nothing remains but palliation.

But it is our belief that in some instances at least these end results are inaugurated by the conditions observed in vivo by the surgeon. The internist must appreciate therefore that in exposing his patient to the action of persistent and recurring attacks of upper abdominal infection due to ulcer, gallstones, cholecystitis and cholangitis he is accepting a chance of irreparable damage to the pancreas. Experience has shown that pancreatitis, which is associated with gall-bladder disease, if operation is an early one, disappears rapidly after cure of the infection. I personally believe, and have no hesitancy in expressing myself to the effect that gallstone disease, embracing as it does, of course, infection of the gall-bladder, liver and common duct, begets conditions of the pancreas often more serious than the primary condition, therefore it is my firm belief that gall-bladder infection should not be allowed to recur, but be operated during the first attack or as soon as the patient recovers from same. I feel reasonably sure that if this course was adopted there would be fewer cases of pancreatic lymphang-

gitis, chronic pancreatitis, to say nothing of diabetes. I fear that a serious obstacle is arising in the shape of wanting to verify stone diagnosis by x-ray, the findings of which being negative the patient will go without operation. I say to my patients not to be x-rayed because if x-ray is negative they may be influenced not to be operated upon, and as my ideas are so strong in this matter, I want them to accept operation at once. Therefore nothing is to be gained, but financial loss, by being x-rayed.

The surgical treatment of chronic pancreatitis resolves itself, therefore, into a question of the best operative treatment of the disease of the biliary tract which is found at operation. Recent bacteriological work has demonstrated what clinical and pathological evidence had long since indicated, that every infection of the gall-bladder is an interstitial infection. This work has emphasized, however, the essentially chronic and persistent nature of such infections. Our experience with recurrence of symptoms after operation upon the gall-bladder, as previously mentioned, is also, that recurrence is more apt to follow when the gall-bladder is left than when it is removed. We incline therefore to cholecystectomy. If there is any evidence of obstruction of the common duct, gall-bladder drainage for an indefinite time or cholecystoduodenostomy are the operations of choice. The latter operations should be undertaken only by the experienced and after careful survey has shown that tissues are satisfactory and union can be effected without tension.

In case of doubt we leave the gall-bladder and sew it to the parietal peritoneum, marsupializing it, in order to provide for prolonged drainage, which alone is efficient in eradicating infection. Common duct drainage is not so satisfactory owing to the liability, fortunately not great, of subsequent stricture.

We may remark in passing that we have almost despaired of diagnosing with any degree of certainty the milder grades of pancreatic infection. Functional tests are not available until the pancreas has suffered considerable damage, if then. The organ possesses a large margin of safety. Even in pronounced cases of pancreatic involvement we have found no evidence of functional derangement. Possibly tests will at some time be devised to give us this information, but of this we are certain that they do not exist now. In a former series of cases of chronic pancreatitis we found 6% showing transient traces of sugar in the urine. In our last series of 64 cases there was not a single instance of glycosuria. The stools show no evidence of pancreatic insufficiency in the early cases. The ferment tests are absolutely useless. The diagnosis is a clinical inference based on the fact that pancreatic disease is associated with biliary disease in at least ten per cent., and sometimes as high as thirty per cent. of all cases. It is more often present in long-standing

disease than in cases of short duration, and more commonly with common duct involvement than in purely cholecystic inflammations. Rarely, very rarely, the enlarged head of the pancreas can be palpated, and at times persistent and marked tenderness can be elicited by deep pressure over the organ. Pain piercing straight through to the lower thoracic or lumbar region is significant and in involvement of the body of the pancreas pain and tenderness may extend transversely across to the left. But all signs may be absent and all rules violated. The diagnosis of chronic pancreatitis in its early stages remains the diagnosis of associated lesions and their treatment in the main constitutes its surgery.

Finally, we should think more often of this organ which is the most important gland of digestion and an essential part of the great endocrine system. We should include it in our plan and rationale of treatment of abdominal disease, and we should neglect no opportunity to add to our knowledge concerning it.

Original Articles.

THE SENSORY EVIDENCE OF NERVE REGENERATION.

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IN a previous communication on this subject, it was demonstrated that the sensory regeneration of a peripheral nerve was selective in character.¹ It was shown that during the process of nerve regeneration in an ulnar nerve lesion, isolated pain points could be demonstrated in an otherwise completely analgesic area, thus proving that the specific sensory receptors for pain (protopathic system) were not only an independent system, but were also more capable of rapid regeneration than the specific receptors for touch.

The conclusion drawn from a study of this case, was the independence of the nerve supply of the skin for specific afferent receptors during the process of nerve regeneration. The specific nerve-endings for touch had completely disappeared and had not begun to regenerate, while the specific receptors for pain were in a stage of very active, in fact it might be said, of overactive regeneration. The findings in this case thus harmonized with the physiological investigations of von Frey and Goldscheider and with the clinical observations of Head and Sherrin, although more stress was laid upon the independence of the regenerating systems.

Since this paper was written, the investigation

on sensory regeneration has been carried still further, with the result that the findings as given there have not only been confirmed in other cases of nerve regeneration, but have received additional corroboration through histological, as well as clinical, evidence.

A further investigation of the case of this ulnar nerve lesion was undertaken four months later, with the following results: The formerly complete anesthetic zone had completely disappeared and light touch was distinctly felt in this area. In this area, also, pain and tingling to light touch with cotton wool and with the camel's hair brush, could be demonstrated. With von Frey's hair esthesiometer, a large increase of pain points could be made out, in an area where several months previously the pain points could be demonstrated only in isolated groups. As will be shown later, this gradual increase of specific pain receptors on the skin furnishes the best evidence of an active and uninterrupted nerve regeneration.

The entire question of nerve regeneration is an interesting one, both from the academic and practical standpoints, since in cases of primary and secondary nerve suture, it is of the utmost importance to have conclusive evidence which will determine the rapidity and success of nerve regeneration. The question is one which presents considerable difficulties, since in the regeneration of a nerve, there is influenced, not only the sensory field innervated by a specific nerve, but likewise the question of motility, the trophic changes as shown by the muscular atrophy, and finally the changes in electrical reaction. All of these data have to be taken into consideration in determining whether the nerve is successfully regenerating, but all of these, the changes in the sensory field are undoubtedly of the most importance, since through the changes in sensation, we are furnished with the best evidence of the highly complex process of regeneration. In recent years, these changes in sensation have attracted considerable attention, as both the quantitative and qualitative changes in the sensory field seem to run parallel with the active regenerating processes in the nerve itself.

Up to the time of the work of Head, on the consequences of injury to the peripheral nerves of man, and his famous human experiment on nerve division,² the data for such sensory evidence was based upon a more or less crude and haphazard method of testing sensation. It was demonstrated, through the work of Head, that the best evidence for nerve regeneration could be found, not so much upon the nature of the electrical reactions, or on the slow regain of muscle strength and tone, but rather upon a close study of the changes in the sensation of the skin over the area supplied by a specific nerve.

It was shown that the nerve supply to the skin is subserved by two anatomically distinct peripheral systems, *i.e.*, the protopathic or pain

receptors, and the epicritic or touch receptors. These systems regenerate at different periods, the epicritic consuming nearly twice the time to regenerate as compared with the protopathic, probably because the latter is a more primitive type of sensation, while the former is of later evolutionary form, and is a more refined sort of discrimination. This selective function of the receptors can be best seen in the specific energy of the various sense organs. These independent sensory receptors can be demonstrated through careful methods of testing, and offer the best evidence at our command of the successful suture of a peripheral nerve.

My own investigations have, however, been carried somewhat further, and it has been possible to demonstrate that these independently regenerating systems can be best verified through the increase of peripheral pain points, or in other words, through the protopathic system. However, through a fortunate opportunity, it has been possible, after a secondary suture, to examine a nerve histologically, and thus compare it with the clinical evidence of partial regeneration at an examination before the secondary suture.

The careful work of Ballance and Stewart³ has considerably modified the viewpoint on the histological mechanism of nerve regeneration, both in the end bulb and in the distal segments. The neurillemas cells assume an active function and produce short lengths of axis cylinders and medullary sheaths, and these, linking themselves together in chains, form continuous axis cylinders and medullary sheaths. Their histological investigations demonstrate that new axis cylinders and medullary sheaths appear between the fourth and fifth week of regeneration, after which date they rapidly increase in size. These never attain full maturity, but remain in an embryonic stage, unless the distal segment is subsequently joined by sutures to the proximal. Evidently some stimulus afforded by the conduction of impulses is necessary in order to permit of the full development of the medullary sheaths and axis cylinders.

From a practical standpoint, this stimulus is afforded by the use of electricity. This partial regeneration, when the proximal and distal segments were not joined, or when the impulses or the anatomical continuity was blocked by scar tissue, was well demonstrated in our first case. In this case, too, after a secondary suture, in which the blocking was removed, the clinical evidence of a rapid regeneration, as compared with the former arrested regeneration, could be easily demonstrated.

Bethe⁴ has shown, in his investigation of the nature of nerve conduction, that electricity in the form of the constant (galvanic) current affects the axis cylinders in actually producing an increase in nerve energy. The various aspects of the inquiries into the nature of electrotonus also confirms these observations of

Bethe, since it has been shown that the galvanic current produces an internal change in the excitability of a nerve, so that in the vicinity of the cathode there is a condition of increased excitability, and in the vicinity of the anode a condition of decreased excitability. It is in this condition of electrotonus in the nerve structures which probably explains the character of the electrical formula in both normal and degenerated nerves.

In the normal nerve the increased excitability of the cathode and the decrease in the anode corresponds to the formula of the normal galvanic reaction ($An\ CC < Ca\ CC$), while in a completely degenerated nerve structure, the opposite is found. This change of excitability or electrotonus persists during the entire time of the flow of the current through the nerve. Now a nerve fixed and stained after the manner of Bethe, gives histological evidence of this change of electrotonus, in that the anode is completely colorless, while the cathode shows a substantially darker coloring of the axis cylinders.* This change takes place only in living nerve structures, and is, therefore, evidently a functional process essential to the transmission of nerve impulses.

According to Ballance and Stewart, the true source of regenerative processes in the peripheral nerves is found in the neurilemma cells of the nerve trunk itself, and not in the anterior horn cells or the posterior root ganglia. Structural regeneration of axis cylinders has never been observed in the central nervous system in cases of experimental hemi-section of the spinal cord, even although the cut ends were left in close apposition, whereas apposition alone can produce regeneration in peripheral nerves. More recent investigations,† however, have shown, that a certain minimal amount of regeneration may take place in the spinal cord, but not to the extent which it does in the peripheral nervous system. For all practical purposes, therefore, it can be stated, that although regeneration occurs only to a very limited extent in the central nervous system, yet certain phenomena of restitution or compensation of function can often be demonstrated in lesions of the central nervous system (Anton⁵). In a study of some spinal cord lesions,⁶ it was pointed out that recovery of function can take place only if the compression has not proceeded to the point of producing irreparable degeneration and the formation of sclerotic tissue.

Kennedy⁷ has arrived at essentially the same conclusions on nerve regeneration as Ballance and Stewart, namely, that young nerve fibres originate from the protoplasm within the old sheath of Schwann.

In some cases, however, as in the case of suture of the musculo-spiral nerve reported by

Dawbarn and Byrne,⁸ the sensory evidences of regeneration took place in an unusual order, light touch appearing before the other forms of sensation. They concluded that this was due, partly to the operative procedure and partly to the anatomical peculiarities of nerve supply rather than to an unusual form of sensory regeneration.

In two of our own cases (Cases 2 and 3) of injury to the median nerve, the pain points appeared very rapidly without scarcely any trace of epirietic disturbance, while in another case (Case 5), there was a reversal of sensory regeneration, in that at one place the protopathic area overlapped the epirietic. Observations such as these, which will be given more in detail in the case records, demonstrate that sensory regeneration may take place in an unusual order, and is not dependent on the physical condition of the nerve suture.

In order to be of any value, the sensory investigation must be carefully done, particularly if there be a secondary suture of a nerve or a nerve transplantation. In these cases, sensation must be minutely investigated both before the operation and at varying periods after it, until it is found to be normal, because the sensory changes offer the most satisfactory evidence of the rapidity and success of the nerve regeneration, far more so than the return of motor power or the changes in the electrical reactions. As an example of how the value of otherwise careful work may be minimized through neglect of this important factor of sensory investigation, we may refer to some of the observations of Ballance and Stewart.‡ In one of their cases, for instance, after the external saphenous nerve had been severed by a bullet, the only record of sensory disturbance is that "anesthesia resulted in the corresponding area of the skin, in the outer aspect of the foot." No further data are given, although a nerve transplantation was done ten months later, and in the section recovered at operation, numerous regenerating axis cylinders were demonstrated in both the proximal and distal segments. In spite of this, no further sensory examinations were made to demonstrate the clinical evidences of nerve regeneration.

If one compares this paucity of clinical observation with the careful work on sensory regeneration of Head, Rivers and Sherren, it will be seen that the latter, although consuming more time, is of the utmost practical value concerning the success or non-success of nerve regeneration. Our observations in a way confirm these experiments, although we have insisted that the best evidence of sensory regeneration, and at the same time showing the independence of the peripheral sensory systems, is the demonstration of pain points, both with the needle and hair esthesiometer in the midst of an otherwise completely analgesic area. In one of our cases, a

* See figures 70 to 73 inclusive and the photographs in Bethe's book.

† See the various publications of Schmaus, Perrero, Rossi, Bielschowsky and Fickler.

‡ See particularly observation 11-A.

histological examination confirmed these clinical evidences of nerve regeneration.

The anatomically distinct protopathic and epicritic systems regenerate at different periods after nerve suture. Thus two distinct groups of sensory impulses may be set free by the end organs in the skin.

Head's case⁹ of a human experiment in nerve division is perhaps the most accurate and elaborate investigation ever undertaken on the sensory disturbances as they occur in nerve regeneration. The radial and external cutaneous nerves on Head's left arm were divided and sutured, and the return of cutaneous sensibility studied for nearly two years under the most accurate conditions, until normal sensation had been entirely restored. At varying periods after the suture, pain sensation was gradually recovered in the midst of an area otherwise completely analgesic, while the area for light touch remained unaffected for a long period, thus corresponding to our investigation of the gradual regeneration of peripheral pain receptors.

In both Head's investigations and my own, the response to pain, either with the needle or the hair esthesiometer, was found to be much greater than when pain points were stimulated with these same instruments over an unaffected portion of the body. This vivid response of protopathic sensibility to painful stimuli was probably due to the hyperactivity of the newly regenerating receptors for pain, since also, the pain sensation during the procedure of testing sometimes irradiated over the abnormal area into normal parts. According to von Frey, protopathic sensibility is due to an abnormal state of the injured nerve, but since protopathic receptors have been found in the normal glans penis, such a viewpoint must be abandoned. Also, as pointed out in my former contribution,¹⁰ Dejerine,¹¹ rather questionably it would seem, is inclined to interpret the occurrence of irradiation and painful points during the process of nerve repair, rather on the basis of neuroma formation in the peripheral stump, than as an evidence of selective sensory regeneration.

The following method of sensory investigation was uniformly carried out in all the cases. Sensation was carefully tested while the patient was in a quiet, relaxed condition, free from disturbing external stimuli. For pain the needle esthesiometer was used; for light touch either cotton wool or a camel's hair brush, while for the regenerating pain points the best results were secured either with the needle esthesiometer or with von Frey's hair esthesiometer, in varying lengths of from 10 mm. to 40 mm. By means of this latter instrument, it was possible to keep a serial detailed record of the sensitiveness and distribution of the regenerating pain points. The sensory field was mapped out directly by means of colored pencils, blue for epicritic and red for protopathic and for the pain

points. This was then made a permanent record for the purpose of comparison with later examinations by tracing the sensory field on transparent paper.

The following detailed reports of cases are (§) in order to demonstrate the various changes in the sensory field at different stages of nerve regeneration.

CASE 1. A young man of 20, on July 5, 1913, accidentally cut his wrist with a glass bottle, severing the tendons, nerve and artery. The injured structures were sutured the same day. Immediately after the injury, there was noticed a sensation of numbness over the palmar distribution of the median nerve. The sensory disturbances persisted, and in addition, increasing weakness of the thumb, index and middle fingers was noted, making it very difficult to hold a pen or pencil in writing for any length of time. An examination on January 25, 1916, disclosed the following condition:

Sensation. The area for disturbed epicritic sensation involved a portion of the median nerve distribution, and within this area protopathic sensibility was also greatly disturbed (complete analgesia). In two portions of the area of disturbed epicritic sensation, where there is complete anesthesia to cotton wool and to camel's hair brush, a large number of pain points can be demonstrated with both the needle esthesiometer and with von Frey's hair esthesiometer at 10 mm. length. Stimulation of some of these pain points with the hair esthesiometer produced painful irradiation to the tips of the middle and ring fingers. In the area of disturbed epicritic sensation, there was also inability to distinguish and correctly discriminate two blunt compass points 1 cm. apart, except in the region where the pain points were crowded together. In this latter place the discrimination was not disturbed, probably due to a fusion of the two sensations through a physiologic irradiation. (See Fig. 1.)*

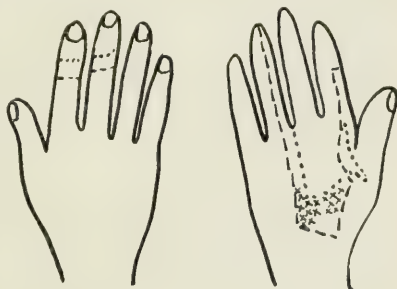


FIG. 1.

This same phenomenon was pointed out as occurring in my study of the ulnar nerve lesion previously referred to. It corresponds to an overflow of reflex action into channels belonging primarily to other reflex arcs, as pointed out by Sherrington.¹²

§ Case 1 was referred by Dr. Albert Ehrenfried, Cases 2 and 4 by Dr. Otto Hermann, Case 3 by Dr. Alice Gray, Case 5 by Dr. L. S. McQuade.

* The legends of all the figures are uniform: dashes for epicritic sensation, dots for protopathic, and crosses for the pain points.

This irradiation from two blunt stimuli is probably due to an increase in the sensibility threshold of the peripheral pain receptors, as during the process of regeneration, there is actually a hyperactivity of these newly regenerating pain receptors, as shown by the large number of pain points which can be demonstrated with the hair esthesiometer.

Motility. There could also be demonstrated motor weakness of the middle finger, and of abduction of the first metacarpal and of flexion of the hand, while the terminal phalanx of the thumb was fairly strong.

Trophic Disturbances. The thumb and middle ring fingers were moist and glossy. In the area of median innervation the nails were brittle. There was moderate atrophy of the abductor pollicis brevis and of the opponens pollicis.

Electrical Reactions. The thumb muscles showed a slightly diminished reaction to faradism, while to the galvanic current, the reaction was slowed, but without polar inversion (An CC/Ca CC).

On the basis of this examination a diagnosis of incomplete regeneration of the median nerve was made, taking into consideration the long period which had elapsed between the time of injury and the examination detailed above, particular stress being laid upon the investigation of the sensory disturbances. A secondary suture of the median nerve was advised. On Feb. 9, 1916, this operation was done by Dr. Ehrenfried.

Operation. An incision was made on anterior surface of forearm, from the middle of forearm down to below annular ligament, excising the old scar tissue. On separating the muscles at the middle of the forearm, the median nerve was found and traced downward. It was discovered to terminate proximal to the annular ligament in a bulbous enlargement. For the purpose of getting a fresh surface for suturing, the neuroma on the extremity of the proximal segment was excised. In order to bridge the gap of about 1.5 cm., which now existed between the two segments, a plastic flap was turned down from the proximal segment and sutured to the distal segment with silk. The deep structures were sewed together to cover the anastomosis, and fascia and skin were united in the regular way. Hand put up in flexion on a wire splint. The wound healed by first intention.

The pathological diagnosis of the excised tissue was amputation neuroma. There was found a large number of nerve bundles going into a mass of scar tissue, with regenerating myelin sheaths and neurilemma cells.

After staining of the tissue with hematoxylin-eosin, it was possible to make a more careful study of the median nerve with the attached scar.

The histological examination disclosed an immense number of neurilemma cells. A fair number of new medullary sheaths could also be demonstrated, the same as occurs after primary suture of a monkey's median nerve or a dog's sciatic nerve. As evidences of active regeneration, beaded myelin sheaths could be demonstrated. At the distal end of the segment, young myelin sheaths could be seen running wave-like in parallel rows, and in one portion of the section there were found a large number of parallel young axis cylinders. The neurilemma nuclei were abnormally abundant, but without any evidence of mitotic figures. In some of the sections also, many degenerated axis cylinders and degenerated myelin sheaths, broken up in

fragments and with absence of neurilemma nuclei, could be demonstrated. New axis cylinders could be seen breaking through convoluted myelin sheaths in a wavy manner. There was also an occasional neuroblast with myelin deposit running into new and narrow myelin sheaths and coming out of some of the neuroblasts there were wave-like prolongations resembling young and regenerating axis cylinders.†

In the work of Harrison,¹³ it was shown, from the standpoint of embryological development, that the protoplasm of the developing nerve fibre is very actively ameboid, retaining its pseudopodia at its distal end. This protoplasm is drawn out into a thread, which becomes the axis cylinder of the nerve fibre. Evidently, therefore, in our case, the regenerating axis cylinders were very young, in fact, had not gone beyond the stage of early neuroblast development.

This histological examination justified the viewpoint that the proliferation of the large number of neurilemma cells had for its object the removal of the functionless fatty substances of the medullary sheaths which break up in the process of nerve degeneration. Certain chemotropic influences may also be at work, as shown by Forssmann,¹¹ who demonstrated that degenerating nerve tissue would attract the regenerating fibres. For the regeneration of a peripheral nerve fibre, the activity of the neurilemma cells is responsible, and consequently they occur in large numbers.

It is both the ameboid characteristic of the regenerating central fibre, and the chemotactic influence of the cells of the sheath of Schwann of the peripheral segments, which leads the young axon towards its old path. The latter, however, may be blocked by the formation of scar tissue, as in our case, or by the presence of bulky sutures, in each instance leading to an interference with the regenerative process.

In our case, the regenerating nerve fibres were seen at both proximal and distal ends of the scar. Although about two and a half years had elapsed since the traumatic severance of the median nerve, yet the clinical evidence for partial regeneration, was seen in isolated pain points within an area otherwise completely analgesic, and also slight pain points in the epicritic zone. The clinical evidence for this active and selective regeneration was verified by the histological findings of active nerve regeneration. The nerve did not completely reestablish the lost sensory and motor function in spite of the active regeneration, because of a blocking of the new and young axis cylinders by scar tissue. According to Balance and Stewart, new axis cylinders and medullary sheaths never attain full maturity, but remain in the incomplete, embryonal stage, unless the distal segments are

† In Balance and Stewart's work there were several plates which showed identical evidences of regeneration as could be demonstrated in my case. See particularly Plate 12 (figs. 1, 2, 3), Plate 2 (figs. 6 and 7) and Plate 5 (fig. 3) for evidences of regenerating axis cylinders.

joined by suture to the proximal. Evidently some stimulus afforded by the conduction of impulses is necessary in order to permit of the full development of the axis cylinders and medullary sheaths. This stimulus may be furnished by electrical treatment, although regeneration may take place, but much more slowly, without the use of electricity. Since after the injury, there was only an incomplete joining of the distal to the proximal segments, due to the blocking from the scar tissue, only an incomplete regeneration took place, as shown by the clinical and histological evidence.

What, then, was the evidence for further regeneration of the median nerve, after the removal of the scar tissue and the secondary suture of the nerve? This can be best seen from the subsequent examinations, during which time electrical treatment was uninterruptedly given.

Examination. (March 11, 1916.) There was apparent increased strength of the index and middle fingers, but all the other muscles were still weak. The nails remained brittle and the atrophy remained unchanged. The atrophied muscles showed a diminished and slow reaction to faradism. To the galvanic current, the reaction was fairly brisk, with a partial polar inversion (An CC=Ca CC). The sensory disturbances (see Fig. 2) were about

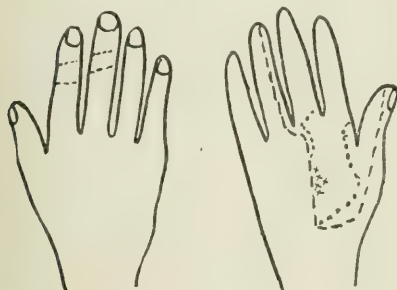


Fig. 2.

the same as at the previous examination, except that the number of pain points (due to beginning regeneration after secondary suture) was smaller than at the first examination. These pain points could be demonstrated with more extreme lengths of the hair esthesiometer than at the period previous to the operation, such as 15 mm. and 20 mm. lengths, showing that the regenerating fibers for the discrimination of pain, were in a very hypersensitive condition, a proof of the success of the regenerative process. The errors in compass discrimination remained about the same, but without any irradiation phenomena.

Examination. (April 15, 1916.) There is less atrophy, all the muscles show increased strength, while the nails are slowly growing. The reaction to the faradic current remained unchanged, while with galvanism the polar formula has become normal, and the minimum contraction with the anode is obtained with 5 c.m.a., as compared with 6 m.a. at the previous examination.

The examination for sensation showed the greatest amount of improvement (see Fig. 3). The

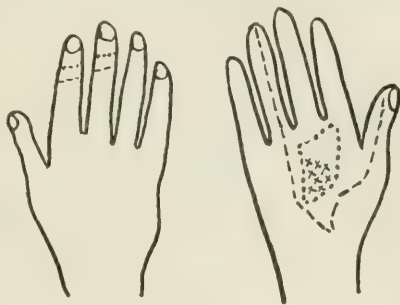


Fig. 3.

area for epicritic disturbance had become somewhat less in extent, while the protopathic area had grown decidedly smaller and showed a marked increase in the number of specific pain receptors. These pain points could be demonstrated, not only with the needle esthesiometer, but also with the hair esthesiometer (von Frey) at varying lengths from 10 mm. to 20 mm. The pressure sense was perceived with von Frey's hairs at 10 mm. and 20 mm. over the upper portion, and also over the entire epicritic area. At 30 mm. hair length there was felt a faint sense of pressure, but no pain.

This examination showed a marked increase in the number and area of pain points, thus demonstrating an active and increasing regeneration in the receptor organs for pain. These protopathic fibres were not only the first to regenerate, but they also regenerated as an independent system. Likewise, as shown by the tests with von Frey's hair esthesiometer at 30 mm. length, the threshold value for deep sensibility is more delicate than for pain points, because deep sensibility is appreciated by the receptors called muscle spindles and the pain points by the independent, specific receptors for pain. This fact was demonstrated and pointed out in my previous work on the ulnar nerve lesion.

CASE 2. A young man, 31 years of age, on Feb. 21, 1916, fell on some glass, inflicting an incised wound in the palm of the left hand and injuring some of the branches of the median nerve. About ten days after the accident, he noticed that the grasp of the fingers became weak, and a little later there was numbness of the thumb and middle fingers. An examination on March 8, 1916, disclosed the following condition:

There was a 3.5 cm. scar in the upper portion of the palm of the left hand, immediately above the palmar digital branches of the median nerve. The scar was somewhat tender, with irradiation of the thumb and middle finger.

Motility. Moderate weakness of the flexor digitorum sublimis, flexor pollicis longus and also of the flexor digitorum profundus of the index finger. The flexor pollicis brevis was weak and showed mod-

erate atrophy. All the other muscles innervated by the median nerve were strong.

Sensation. (See Fig. 4.)[†] Over a portion of the



FIG. 4

palmar sensory distribution of the median nerve, there were disseminated areas of disturbed epicritic sensation, in the midst of which a large number of hyperalgesic pain points could be demonstrated with the needle esthesiometer and with von Frey's hair esthesiometer at 10 mm. and 20 mm. lengths. There was complete inability to appreciate dull compass points 1 cm. apart in the area of disturbed sensation.

Electrical Reactions. There was no change of the weakened muscles to faradism or galvanism. Under electrical treatment, there was complete recovery in about two months. The improvement, as shown by subsequent examinations, was as follows:

Examination. (April 8, 1916.) The scar is less sensitive and there is less atrophy of the flexor pollicis brevis. As a whole, the weakened muscles are much stronger. The area of disturbed (epicritic) sensation is decidedly less in extent, but within this area, the regenerating pain points can be demonstrated with the hair and needle esthesiometers, as before. Of course, with the diminished area of sensory disturbance, the regenerating pain receptors had disappeared outside of the area as regeneration became complete. (See Fig. 5.)



FIG. 5

Examination. (April 27, 1916.) The formerly affected muscles are now of normal strength. There is now only a very small area of disturbed sensation, about 0.5 cm. in diameter, at the base of the

[†] In Figures 4 to 6 inclusive, the unbroken line in the palm represents the scar.

scar. Within this area, the pain points can be demonstrated only with the needle esthesiometer and not at all with the hair instrument. These pain points are more isolated and less sensitive (see Fig. 6), showing that regeneration was proceeding more slowly than immediately after the injury.



FIG. 6

Examination. (May 15, 1916.) No further disturbance of sensation. Recovered.

This case was interesting, in that recovery was very rapid. The clinical evidence for this was seen in the large number of pain points from the beginning, showing a hyperactivity of the newly regenerating receptors for pain, and the gradual decrease in the sensibility of the pain points as recovery progressed. Furthermore, the type of regenerating sensory disturbance was unusual, as the protopathic system was of the same area as the epicritic, instead of being less in extent, as is usually the case.

CASE 3. A somewhat similar type of an unusual, regenerating sensory disturbance was found in a woman of sixty-three, in whom some of the fibres of the median nerve were injured and caught in scar tissue, after an operation for ruptured tendon of the thumb. Immediately after the operation, there was a sensation of numbness over the distribution of the median nerve, followed later by some spontaneous pain and hyperesthesia to heat and cold. At the time of the examination, about four months after the operation, the sensory disturbance had greatly diminished in extent and intensity.

Examination.

Motor Flexors of fingers strong. Moderate wasting and slight weakness of the thumb muscles supplied by the median nerve.

Trophic. Nails normal. A little mottling of the skin and some excessive sweating over the thumb.

Electrical Reactions. The wasted muscles show no change to faradism. To the galvanic current, the reaction to the anode is slow, to the cathode quick. There is no polar inversion (An CC<Ca CC).

Sensory Examination. (See Fig. 7.) A camel's hair brush over the palmar surface of the hand, including the index and middle fingers and half of the ring fingers, produces a tingling sensation, while over the dorsal aspect of the middle and ring fingers (terminal phalanges) there is a diminished sensation. Over the palmar surface, with the needle



FIG. 7.

esthesiometer and with von Frey's hair esthesiometer at 10 mm., 20 mm., 30 mm., and 40 mm. length, a large number of hyperalgesic pain points can be demonstrated in the midst of the area of disturbed epicritic sensibility. The pain points are more crowded together in some portions than in others. There is no disturbance to the dull compass points.

CASE 4. A young man, age 21, caught his left hand in a machine and cut the tendons on the ulnar side of the left arm, including the flexor carpi ulnaris. Immediately after the accident, numbness of the ulnar side of the left hand was noticed. An examination eight days after the accident disclosed the following condition:

Motor. A little weakness of the flexor carpi ulnaris and also of the adductor pollicis. The hypothenar group of muscles and the interossei were very weak.

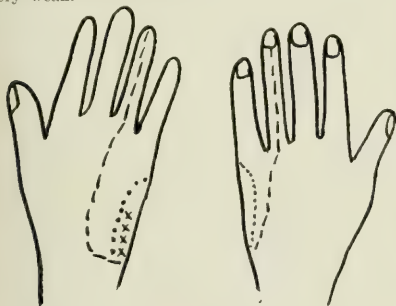


FIG. 8.

Sensory Examination. (See Fig. 8). There is a marked disturbance of both the epicritic and protopathic sensation over the ulnar distribution. On the palmar surface, in the midst of the area of complete analgesia, isolated pain points, with irradiation during the test to the end of the little finger, could be demonstrated with the needle esthesiometer and with von Frey's hair esthesiometer at lengths varying from 10 mm. to 30 mm. inclusive. Compass points 1 cm. apart could be appreciated as only one point over the area of disturbed sensation.

Electrical. The weak and atrophied muscles fail to react to a strong faradic current. The reaction to galvanism is slow and vermicular, the minimum

contraction with the anode not being obtained until the current became of 8 ma. strength, as compared with 4 ma. on similar muscles of the unaffected hand. There is complete polar inversion (An CC>Ca CC).

CASE 5. A woman, age 55, accidentally cut the base of the right thumb with a plate. Since the accident, the thumb has felt numb and painful. An examination three weeks after the accident, demonstrated the following conditions:

There is no weakness and no atrophy of the thumb muscles. At the base of the right thumb, there is a 2 cm. semi-circular scar. Over the thumb area of the cutaneous branches of the median nerve, marked sensory disturbances can be demonstrated (See Fig. 9). The protopathic area of dis-



FIG. 9.

turbed sensation covers nearly the entire thumb, and within this area, instead of external to it, as is usually found, there is an area of disturbed epicritic sensation. Within this latter zone, pain points can be demonstrated with the needle esthesiometer at 10 mm. and 20 mm. length.

In this case, as in one other of the series (Case 2), there is an unusual or reversed order of sensory regeneration, in that the epicritic area is within the protopathic.

CASE 6. A boy, 11 years of age, on Dec. 17, 1915, accidentally thrust his left hand through a window pane, inflicting a severe cut on the wrist. Immediately after the accident, there was difficulty in using the fingers. Five weeks after the accident an examination disclosed the following condition:

There is a scar on the left wrist over the median nerve. Tapping this scar produces a tingling sensation on the thumb and index finger. Sensory disturbances over distribution of the median nerve. Wasting of some of the muscles supplied by the median nerve. No polar inversion to the galvanic current.

Examination. (Feb. 10, 1916.) All the muscles innervated by the median nerve are weak and atrophied. No glossy skin or trophic disturbances of the nails. The reaction of the atrophied muscles is slow to faradism. To the galvanic current, the reaction is very slow and with a partial polar inversion (An CC = Ca CC).

There is a marked disturbance of both the epicritic and protopathic sensation (See Fig. 10), over



FIG. 10.

the distribution of the median nerve. Within a portion of the pure protopathic area, a group of pain points can be detected with the needle esthesiometer. Within the area of pure epicritic disturbance, there is total inability to distinguish two compass points 1 cm. apart (100% errors). No sensory disturbances over the dorsal surface of the hand.

Examination. (March 15, 1916.) The sensory disturbances and the number of pain points remain about the same, with the exception that there is more irradiation in the stimulation of the pain points and, furthermore, they can now be demonstrated with the hair esthesiometer at 20 mm. (increased sensitiveness of pain receptors showing active regeneration). The compass test now shows only about 60% errors. There is less muscular weakness and atrophy, and the reaction to faradism is now about normal, while to the galvanic current, the reaction is more brisk and with a return to the normal galvanic formula ($An\ CO < Ca\ CO$).

Examination. (April 20, 1916.) With the exception of the finer movements of the thumb, all the muscles innervated by the median nerve are now stronger. The electrical reactions remain unchanged. The compass tests, 1 cm. apart in the epicritic area, now show only about 40% of errors. The most marked improvement is shown in the character of the sensory changes (See Fig. 11).



FIG. 11.

The area for both epicritic and protopathic disturbance has grown smaller and there is a large increase of pain points with painful irradiation in the midst of the protopathic area, with both the

needle esthesiometer and von Frey's hair esthesiometer at 10 mm. and 20 mm. length. This increase of the active pain receptors demonstrates an increasing regeneration.

On the basis of my previous contribution and of the clinical and neuropathological data here presented, the following conclusions may be drawn:

The nerve supply of the skin is not only different for the various receptors for pain and touch, but each of these regenerates at varying periods after a primary or secondary nerve suture. The time necessary for the beginning of the regenerative processes varies, although definite evidence of regeneration could be found within less than a month after suture of a nerve.

The best evidence of regeneration, both from the standpoint of time and of successful nerve suture, is seen in the protopathic system. Here, when the tests are carefully made, pain points of various intensity and number can be demonstrated in the midst of an area otherwise completely analgesic. That these pain points are evidences of a regenerative process in the nerve was demonstrated, not only clinically, but was also completely corroborated in one case where it was fortunate enough to secure a histological examination after a secondary nerve suture.

The decrease in the threshold-sensibility of these pain points seems to run parallel with the time and success of the nerve suture. By this is meant, that during the period of early regeneration, the pain points are very hypersensitive, probably a type of protective mechanism in order to guard the end-organs of the skin from external injury during their most delicate period. As the process of regeneration proceeds, these pain points become less and less sensitive, finally disappearing altogether when regeneration is complete.

It seems, also, from our clinical and neuropathological studies, that the true source of regenerative processes in the nerve trunks is to be found in the neurilemma cells of the nerve trunk itself. It is in the presence of the neurilemma cells, or rather on their very active proliferation, that the possibility of regeneration and recovery after injury or suture is based. Such a theory of the mechanism of nerve regeneration* has an important bearing upon the conception of the histogenetic structure of the nervous system and also upon the more practical aspects of the evidence of regeneration after primary or secondary suture.

* See on this point the various important publications of S. Ramon y Cajal.

REFERENCES.

- Coriat, Isidor H.: Selective Sensory Regeneration in an Ulnar Nerve Lesion. *Jour. A. M. A.*, 1916, Vol. lxvi, pp. 407-409.
- Head, Henry, and Rivers, W. H. R.: A Human Experiment in Nerve Division. *Brain*, 1908, Vol. xxxi, p. 323.
- Ballance, C., and Stewart, F.: The Healing of Nerves, 1902.
- Baehner, A.: Allgemeine Anatomie und Physiologie des Nervensystems, 1903.
- Anton, F.: Ueber den Wiedersatz der Function bei Erkrankungen des Gehirns, 1906.

- ⁶ Coriart, I. H., and Crandon, L. R. G.: Three Cases of Spinal Cord Surgery. Medical and Surgical Reports of the Boston City Hospital, Sixteenth series, 1913.
- ⁷ Kennedy, Robert: On the Regeneration of Nerves. Journal of Anatomy and Physiology, Vol. xiv, 1886.
- ⁸ Journal of Nervous and Mental Diseases, Vol. xliii, No. 2, February, 1916.
- ⁹ *Loc. cit.*
- ¹⁰ *Loc. cit.*
- ¹¹ Duret, J.: Seminaidie des affections du système nerveux. 1914, p. 805.
- ¹² Sherrington, C. S.: The Integrative Action of the Nervous System. 1906.
- ¹³ Harvillat, Rose Granthel: The Harvey Lectures. 1905.
- ¹⁴ Fergusson, J.: Ziegen's Betteln. AMJ, 1898.

POSSIBILITIES IN SOCIAL SERVICE FOR PSYCHOPATHIC PATIENTS.*

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Social service for psychopathic patients appears at first thought as a new subject; but actually in principle and in practice it is as old as medical care of the insane; for the treatment of mental disease is essentially so largely concerned with environment, that physicians in hospitals for the insane, and alienists in private practice, have always performed many services for their patients which were of the nature of social rather than medical work. It is the application of the principles of social service through systematic organization that is new, a development of the last five years. This movement for organization is receiving impetus from four strongly marked tendencies of the present day,—(1) a quickened sense of the importance of the individual; (2) the demand for the highest possible efficiency in all work; (3) an increasing realization, with more exact knowledge, of the relation between psychopathic conditions and crime, pauperism and other social maladjustments; and (4) the rapid spread of the principle of prevention in medicine.

Increased interest in the individual is one of the characteristics of the present day. In medicine we are no longer satisfied that attention to the social needs of the patients shall be casual, depending upon the personal interest or available time of the physician.

When you send a friend to a hospital you have a right to expect that everything shall be done for his improvement that can be done,—if he needs a change of environment or a new kind of occupation more than hydrotherapy, naturally the hospital should be equipped to supply the social remedy as well as the medical treatment.

Efficiency requires that hospitals watch over their discharged patients for a period, to insure continuation of the improvement effected by the hospital care and to prevent relapses, as a result of the sudden transition from the sheltered hospital life to the perplexities of

community life. This fact is recognized in the practice of discharging committed patients on trial, the first six months being considered a "visit" away from the hospital, during which the patient may be brought back if necessary. Obviously, it is desirable that these patients should be visited at their homes, that they should be assisted over difficulties in the way of securing proper living conditions, suitable employment, recreation, and congenial companions. If after months or years of care, the hospital discharges the patient to sink or swim, it is not completing its function; for lack of a proportionately small outlay it fails to reach its highest efficiency in the recovery of patients.

Relations between social and mental disorders, recently more widely studied and practically considered than in the past, lead the sociologist and the social worker to a more immediate interest in mental defect and mental disorder. The responsibility of the state for support of the dependent insane and the physical care of the insane in hospitals have always been matters of concern to social workers, and many of the reforms of the last twenty-five years in improved hospital conditions have been secured by the combined efforts of physicians and social workers. The first meeting of the National Conference of Charities and Correction in 1874 was devoted chiefly to the subject of "The duty of the states toward their insane poor,"¹² and the first address was by a physician. Further studies and experiments to advance our knowledge of the social bearings of psychopathic states will depend largely on the activities of social workers.

Preventive medicine demands the treatment of the earliest symptoms of mental disease with a view to preventing, or at least deferring, acute attacks and chronic conditions; and it is only through following the patient into his daily life, and working upon his environment, that these early symptoms can be understood and treated.

These influences have led to a demand for social service as part of the organization of the hospital. Recently in New York, the State Hospital Commission, through the assistance of the State Charities Aid Association, began the work of organizing social service in all the state hospitals, fourteen in number. Two only already have a social worker. In six of the state hospitals of Massachusetts, a beginning has been made with one social worker in each hospital, except the Psychopathic Hospital which has two on public salary. A letter of inquiry sent to all the states brought out that only two other states have attempted any organized form of social service in insane hospitals,—Minnesota, which has one visitor in one of its five hospitals, and Wisconsin, which has a visitor for each of its two hospitals. Replies from superintendents of state hospitals in eighteen states either said that plans for social

* Read before the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 18, 1915.

work were under consideration, or expressed regret that it had not yet been undertaken.

Superintendents of state hospitals are reported to be opposed to the organization of social service in connection with their hospitals. This is hearsay, for I have never met any superintendent who bore out this report, and I am inclined to doubt its accuracy. The true meaning of the report I take to be, that superintendents are wary about admitting into the intricate mechanism of a large hospital, a new type of assistant, not previously instructed, to do work which involves responsibilities as serious as the physician's and offers almost unlimited opportunities for interference with the medical work. However, if the social workers are carefully selected and are able to perform their own functions successfully without assuming functions which are not theirs, the suspicion or indifference of the physicians will be dissipated by the obvious value of their assistance.

Even the superintendent in Nebraska, who wrote, "Everyone employed here is supposed to act as a social agent for the benefit of all patients," would doubtless be glad if he saw more things for the benefit of more patients being done by a special agent, than could be done by anyone else in the institution.

In systematizing the social work of a hospital the first thought naturally is that a physician should be detailed for this work; and there is no reason that I can see why a physician should not make the best kind of social worker if he is willing to turn all his energies into a line of work that is not primarily medical. The necessity for this specialization in order to attain excellence is presumably as true in social work as in other lines. Fifteen years ago health officers were physicians who gave to the work only a part of their time; today, with the rapid development of sanitary science, the public health officer is either a physician or a layman, specially trained and on full time.³ The prospect is that the psychopathic social work of the future will be done by persons, who, whether or not they have been previously trained for medicine, for nursing or any other calling, shall have had training for social work with specialization in psychopathic social service. General training in social work is now offered by half a dozen private training schools in this country, and will undoubtedly be offered in time by the universities. A significant step in this direction is the post-graduate course in Social Economy and Social Research given at Bryn Mawr College for the first time this year. In coöperation with the private training schools and the graduate schools, the psychopathic hospitals should be able to offer special training for psychopathic social work.

I am discussing the professional and administrative aspects of the subject, because I believe that is what we need to emphasize at pres-

ent. We are getting past the time when, in order to secure interest, it was necessary to tell sad stories of the misfortunes of patients who had gone unassisted from our hospitals because their social needs did not happen to come to the attention of the doctors; or to tell of the joy in life made possible for young women saved from invalidism and found healthful employment and congenial homes through the efforts of social workers. In the beginning of any movement our attention is caught by the appeal to our emotions, we are stirred by individual human needs. Twenty-five years ago, in urging reform in the care of the insane, it was necessary to dwell on the horrors of cells and chains. Now I do not need to tell you how social work saved from chronic invalidism a young girl suffering from a generalized tic, which caused her to jerk her limbs so badly that she was incapacitated for work or for any social life; or how a man cut off from a skilled trade at the age of forty by an occupational neurosis was saved from the almshouse or suicide by having other means of livelihood obtained for him. No one now fails to see that certain patients require attention to their social needs as a part of their treatment from the hospital,—convalescent care, employment, temporary financial assistance, etc. But we have hardly begun to urge that every patient should have the benefit of this social care, if he needs it. To discover the need requires an examination of the social condition. It seems logical to expect that social examination and treatment should be part of the hospital care of every patient.

Among psychopathic patients it is sometimes found that the treatment is entirely social, as in cases of defective delinquent girls; some cases will be found on examination not to need social care; in most cases medical and social treatment dovetail—the neurasthenic who has become so despondent that he cannot go on with his work, and fears he will commit suicide, needs not only medical care but also financial assistance to relieve his well-founded anxiety about his family, and more blankets so that he may sleep alone instead of with his youngest son. In seventy-five per cent. of the cases at the Psychopathic Hospital it seems clear that adequate care of the patient requires social work.

Along with the immediate care of patients there are certain indirect results from systematic social service, which are of no less importance. (1) Medical work is promoted by the assistance given to physicians by social workers in obtaining the histories of patients. Often a diagnosis is not possible without a knowledge of the patient's past conduct and environment. In many cases continuous observation of the patient in the community, and experiments in adjustment of his environment, are necessary before the diagnosis can be deter-

mined. In this way an earlier diagnosis can be made, which is not only of primary importance to the patient, but also important to the study of mental disease. In treatment, the physician is assisted by the social worker who sees that patients, who otherwise would fail to return to him, report at the hospital as long as he considers it necessary; and also sees that patients carry out his directions.

Many medical problems on which psychiatrists are working cannot be studied thoroughly without social work; for example, in studying the effects of syphilis in families of known syphilites, it is essential to have a social worker who can persuade the families to come to the hospital for examination.

(2) The hospital social worker serves the community in seeing that families of patients, who otherwise would drift into privation, are provided for or helped to be self-supporting;—a mother left with two young children when her husband was committed is able to support them with the help of a relative, a day nursery, and a position that was found for her. Another saving to the community is brought about through the examination and early treatment of other psychopathic individuals in the families of patients. In one family nine persons, in addition to the little girl who was the original patient, are now under the care of the Out-Patient Department at the Psychopathic Hospital.

(3) The saving of expense to the state in the prevention of crimes by psychopathic individuals through social supervision cannot be calculated; but specific instances indicate that it may be considerable. Several years ago Mr. Homer Folks said the State of New York spends "one-seventh of its income in taking care of its insane, but it is a relatively unproductive expenditure."¹ This year the New York state hospitals will spend approximately \$7,000 of their appropriation for social service as the first step in a general movement for preventive work.

Through the care of social workers, many patients who would become a charge upon the state are kept at home either self-supporting or maintained by relatives. During our two years' work at the Psychopathic Hospital, twenty patients, who by all indications would otherwise have required institutional care, have been kept in the community through the activities of the Social Service. Averaged at a saving to the state of one year's maintenance each, they show a saving of \$5,200, which is \$700 more than the amount paid by the state in salaries to our social workers during this period. As three of these patients, who were insane, were returned to their native countries, the state was probably saved in their cases many years' support. So that in relation to the state treasury, this department has more than paid for itself.

A community plan for social service for psychopathic patients would begin with the public health service. Child hygiene is now a recognized part of this service; for physical illness private organizations furnish district nurses; and the health officer is beginning to talk of mental hygiene as a function of public health work. This would mean eventually a psychopathic social worker in every district, working in cooperation with the psychopathic clinics and hospitals, under some form of organization that would insure both social and medical supervision. Then each hospital should have its staff of social workers, both for out-patients and ward patients. At the present time for all the state hospitals of Massachusetts the necessary number of social workers would probably not exceed 25, estimating that one worker is needed for every 200 admissions in a year.⁴ This number does not seem surprisingly large when it is considered that the State Board of Charity employs about 100 social workers in the care of dependents; the Boston Consumptives' Hospital alone requires 24 visiting nurses; the Massachusetts Training School employs 16 visitors for their paroled boys and girls. There were 147 physicians, exclusive of superintendents, employed by the state hospitals last year. Taking into consideration the large proportion of time a social worker must spend in travelling, the proportion of the number of persons required for the social work in relation to the medical staff is not high.

A comprehensive plan for social care of the psychopathic also includes a certain amount of knowledge of mental defect and mental disorder as part of the training of all social case workers in whatever agencies. The social worker of a relief agency who, instead of thinking a man whose family had applied for aid, was "lazy, cranky, or ugly," recognized indications of general paresis and sent the man to our Out-Patient Department, has saved much suffering and wasted effort, and has given the man what chance there may be of improvement through treatment. The visitors of social agencies have large opportunities for bringing under medical care early cases of mental disease.

In conclusion, social service for psychopathic patient seems to be a natural development in the movement for improved care of the insane. It has its origin in practices that have always existed in hospitals for the insane in an unorganized form. As a systematic method, it has been stimulated by recent developments in sociology and medicine. The medical profession will naturally move with caution in the extension of systematic social work, and it is well that they should, so long as caution is distinguished from inaction. The logical development of the principles of social service leads to the belief that eventually social examination and treatment will go hand in hand with medical examination and treatment in the care of all

psychopathic patients. To realize this object the training and education of social workers must be advanced to be comparable with medical training. Ultimately, it may be expected that psychopathic social work will be part of the local public health service and of the organization of all psychopathic and insane hospitals.

REFERENCES.

- ¹ *The State as Alienist: An Impartial Review of Twenty-Five Years of State Care of the Insane in New York, and a Candid Discussion of the Future of the State Hospital System*. By Homer Folks. Published by the Committee on Mental Hygiene of the State Charities Aid Association, 105 East 23d St., New York City.
- ² *Proceedings of the National Conference of Charities and Correction*, 1874.
- ³ *A Manual for Health Officers*, by J. Scott McNutt, New York, Wiley, 1915.
- ⁴ Further Notes on the Economic Side of Psychopathic Social Service, by Mary C. Jarrett. Being Contributions from the Psychopathic Hospital, No. 54, (1911-20), read at the second annual conference on the medical and social work of the Psychopathic Hospital, Boston, June 26, 1914.

INEBRIETY FROM A MEDICAL VIEW-POINT.*

BY IRWIN H. NEFF, M.D., NORFOLK, MASS.,

Superintendent Norfolk State Hospital.

A REVIEW of the literature on alcoholism reveals the need for a more extended and comprehensive clinical study of alcoholic poisoning. Considerable laboratory work has been accomplished, but the study of inebriety and the results of alcoholic excesses have been approached mainly from physiological and pathological viewpoints. The clinical manifestations are imperfectly described and quite generally misunderstood. It is true that textbook descriptions and classifications are procurable, but when these are applied to practice they are quite generally found to be inadequate and inconclusive. The ignorance of the physician to the true clinical significance of inebriety is proverbial. The neglect properly to instruct the medical student, and a natural disinclination of the physician to seek for knowledge, which is but imperfectly described, may be offered as justifiable excuses for this unenlightenment. From a sociological point of view, the problems of drunkenness (alcoholic poisoning) have received praiseworthy attention. The failure of the medical profession to assume the rightful leadership in this medico-social work is largely responsible for the many exaggerated statements which have been advanced by well meaning persons on the use and abuse of alcohol. Many of these promoted theories are quasi-medical and have been accepted by the public as authentic and scientific. Much of the data thus compiled, incomplete and insufficient as it is, has heretofore served as the

working capital for the advancement of a theory for the exploitation of an alleged cure. It has been said with considerable truth that much harm has resulted from the abuse of alcohol, but it can also be said that an equal amount of harm has come from distorted reports, emanating from well meaning, but misinformed, extremists. The omnipresent charlatan and nostrum-maker has taken advantage of these divided and diversified opinions, and has profited at the expense of a credulous public. I mention these facts to emphasize the conviction that these lamentable conditions would have been less likely to occur if a medical censorship had been exercised and consistently employed. It is not within the scope of this paper to deal with the physiologic and pathologic aspects of alcoholism; rather would I have it understood that my intention is to argue for a more rational and comprehensive clinical study of the alcoholic,—a study which will allow for a logical practice of preventive and curative measures. The study of a condition or a disease must necessarily begin by studying the environment of the individual responsible for the state or disturbance. Inebriety is no exception to this rule. The study of the inebriate is necessarily the foundation stone for any suggestion advanced to the public for the amelioration or control of drunkenness. The modern laboratory study of defectives has revealed an amazing number of incompetents with a graded responsibility intimately related to the quantity and quality of the incompetency. Quite a considerable number of these incompetents are what is termed "alcoholic deteriorates," who are not certifiable cases of insanity, yet it is evident to the analyst that such cases are not of normal makeup; they are not feeble-minded, and for categorical purposes they are assembled as "alcoholics." A peculiarity is recognized in these people, but until this peculiarity is accurately defined we are obliged to withhold its description. When we study the non-criminal alcoholic we detect in one type, namely, the inebriate, a peculiarity, or, more properly speaking, an idiosyncrasy which is pre-existent, antedating the alcoholic symptoms. This idiosyncrasy to alcohol, which is analogous to individual idiosyncrasies to other drugs, is distinctive, and is really the underlying or predisposing cause for the inebriate syndrome of which drunkenness is the pathognomonic symptom. The failure to recognize and properly to treat the distinctive constitutional peculiarity preceding the drunkenness is responsible in great part for many ill successes, and can also be held accountable for many incongruous methods advanced for the cure of habitual drunkenness. Delayed diagnosis, delayed until the alcoholic syndrome is confirmed and attended with recognizable physical and mental ailments, is unfair to the patient, and is manifestly a medical error, which could have been prevented by a skilled diagnostician.

* Read by title before the American Medico-Psychological Association, April, 1916; and before the Norfolk District Medical Society, October 31, 1916.

Alcoholism, as a clinical study, is divisible into its component parts. The successful care of any case demands, not only individualization in the method of treatment, but an accurate differentiation of the types and an appreciation of the personal equation. The neglect of the clinician to practice these precepts can be held responsible for ill success in his treatment of many cases of alcoholism.

Inebriety is but one phase of alcoholism, yet in this form we have the acme or the extreme of acute poisoning; in other words, in its incipency we find the sum total of the symptoms of drunkenness in its true and uncomplicated form. Owing to the fact that the inebriate by the nature of his condition is conspicuous, the inebriate type of alcoholism, namely drunkenness, has excited the major share of public attention, and paradoxically this type has received the minimum degree of medical study. Chronic non-inebriate alcoholism, from a mental and physical point of view, is a well-studied disease. Its symptoms are clearly described and well understood; its assignable causes have been determined, and the methods for its cure or amelioration have been developed on uniform lines.

It can no longer be said that the chronic inebriate is an enigma. The study of inebriety has shown conclusively that the victim is pathologic; furthermore, it has been proven that the chronic inebriate condition is a clinical entity, and that the pathognomonic symptom, habitual drunkenness, is but an expression of a constitutional peculiarity, the peculiarity intimating a susceptibility to a toxic agent. It is not sufficient for us to dismiss the subject by a mere acknowledgment of the condition, and declare the drunkenness wilful in the sense that the drunkenness and the consequent symptoms could have been controlled by the patient. With as much reason could we maintain that the paroxysms of hysteria or the habit mannerisms of the neurasthenic could be controlled or prevented by the sufferer. In these two mental diseases, we recognize a psychoneurotic cause; an analogy can be observed in the inebriate condition. The failure of the physician to recognize the underlying mental causes which are alone responsible for the inebriate syndrome, has been the incentive for the many ill-timed, ill-regulated, and unethical methods which have been advanced for the cure of drunkenness. The attitude of the medical profession toward inebriety should be in its fullest sense an appreciative one, an appreciation of its true significance, and co-existent with this appreciation there should be an intimate knowledge of the preventive and curative measures which should be employed for the proper management of the condition. It is not consistent with our medical ideals and our humanitarian instincts to neglect a subject that is one of the more important medico-social studies of the present day. Habitual drunken-

ness from a social and economic point of view has received a vast amount of study, and yet even a cursory review shows a mass of facts which lack correlation and reliable censorship. Assuming that the physician appreciates that inebriety is a distinctive condition, and that the inebriate requires specialized treatment, what should be his method of approach? It must be admitted that many erroneous and unchallenged opinions existing for many years, and which have been accepted by many persons, offer certain obstacles which must be removed before a universal plan for the treatment of habitual drunkenness can be advanced and adopted. It has been found, however, that when properly approached, these wrongly informed persons are susceptible to education. In this respect the duty of the medical profession is clearly an educational one,—an education of the people to a public health measure, and to the need of a definite system for the care of inebriates which will be rational, effective and capable of universal adoption. It should be remembered that from a medical viewpoint, we are looking at the matter of alcoholism in a purely practical, but withal in a scientific, way. Sentimental antagonism and generalized and exaggerated statements have formerly operated against any decided advancement in the way of popular education on the dangers and abuse of alcohol. We should remember that reforms, to be enduring, must always be of slow growth. For countless ages, mankind has made use of alcoholic beverages, and the customs and habits of a people cannot be changed over night. Some people think that they can rightly use alcohol, and that the prevention of its use by them would be a constitutional wrong. It is, of course, much easier to show the misery, want, and suffering occasioned by drinking, than it is to set forth the fancied enjoyment that a number of normal-minded persons find in the use of liquor. All people are not cast in the same mould and cannot be made over by law, desirable as this might be in some cases. Those who seek this end through prohibitory legislation run counter to a factor in human nature that it is never safe to ignore. It is the duty of the physician to admonish every person to acquaint himself with the argument against abuse of agents which have been proven under certain conditions to be poisonous. As physicians and clinicians, we should be prepared to make a sharp distinction between the effects of alcohol *per se* and the contributing factors which are usually present in the life history of an alcoholic; alive to this issue, we would then be able to differentiate between cause and effect. Again, with such a knowledge we could, in our differentiation, realize the influence of the predisposing factors which antedate the alcoholism. An intimate study of the statistics of alcoholism will often develop inaccuracies which invalidate many carefully prepared statistical tables. It is at once apparent

that here again proper medical censorship would have minimized these errors and prevented misunderstandings which have handicapped us in our educational campaign.

The following deductions are offered as medical truisms. We have elaborated them from our experience and offer them as a working basis.

(a) Inebriety is an expression of nervous weakness or instability. Used in its simplest sense, it could be called a psycho-neurosis. Many cases show symptoms which are found in neurasthenic states and allied conditions. Drunkenness is a symptom of an unstable nervous system, and a contrary view is not justified by clinical observation or experience.

(b) The exciting causes of inebriety are of a physical and psychical origin; given a predisposed subject, the crisis of inebriety may be precipitated by any marked departure from ordinary routine (psychical), or by any disturbance of a physical nature (physical).

(c) Inebriety is prone to develop at the critical epochs of life, namely, pubescence, adolescence and involution. Developing during involution, it is generally the effort of an individual to maintain his productive powers by recourse to artificial stimulation. The declaration of inebriety at these periods suggests an analogy to the psychoneuroses.

(d) Inebriety, being an expression of neuropathy or psychopathy, may be preceded by or accompanied by a multiform nervous syndrome. Thus each case is essentially different.

(e) A comparatively small percentage of the users of alcohol are confirmed drunkards or inebriates.

(f) The appropriate care of inebriety implies both curative treatment and custodial care; curative treatment being directed to the case which is likely to be benefited, the custodial care, for economic reasons, should be directed to the recidivists. For the purpose of individualization in treatment, such a differentiation must eventually be made, and an appropriate segregation of these two types established.

The fundamental part of the system which is now in successful operation in Massachusetts is the recognition of the true personality of the inebriate, and consequently an appreciation of the need of specialized and distinctive treatment for the condition. We realize that the syndrome which we call drunkenness has mental and physical elements which require accurate differentiation and individualization. In inebriety there is apparently a physical desire to combat; this physical desire has been described in all probability as a reflex, the dominant cause being a psychologic element of nerve habit; in other words, as one author has very tersely put it, as the alcoholic's physical desires are increased to the point of frenzy by his mental interpretation of such desires, so can no cure be successful without his mental belief that he is

improving and can be cured; hence, no cure has been or can be successful that does not treat the mind of the patient,—that is not suggestive. Again, ill success in the treatment of cases can often be attributed to the failure of the physician to recognize this fundamental point in the psychology of the patient; as in other diseased conditions the probability of permanent improvement is enhanced by recognizing inebriety in its incipency. The pathognomonic symptom of inebriety, alcoholic toxemia, and the consequent habitual intoxication, is an indication for immediate treatment, which should be instituted before the confirmation of the habit. Inebriety is a medico-social study. The medical profession should take the initiative in devising a method for the education of the public to the dangers of alcoholic excesses and abuses. The physician should naturally assume the leadership in promoting any measures inaugurated for the prevention or amelioration of drunkenness. By assuming such responsibility he is exercising his prerogative. The public, assured of the use of a scientific and well-censored method, will eventually regain its lost confidence, and, naturally, it will follow that public sentiment will sustain any practical and uniform method advanced for the treatment of public drunkenness.

THE FRAMINGHAM HEALTH AND TUBERCULOSIS DEMONSTRATION.*

By D. B. ARMSTRONG, M.D., FRAMINGHAM, MASS.

Assistant Secretary of the National Association for the Study and Prevention of Tuberculosis, and Executive Officer of the Framingham Health and Tuberculosis Demonstration.

Is it possible to discover and to place under adequate medical, nursing and relief supervision all of the cases of tuberculosis, incipient and advanced, in a normal industrial community?

Is it possible to ascertain with some degree of definiteness the responsible social and economic factors in disease causation, including all types of morbidity, not only tuberculosis?

What is the most efficient utilization of the existing means available for the discovery and treatment of disease? What percentage of theoretically preventable disease is practically preventable with the use of known but unused, or at least uncoordinated instruments? What is the best possible adjustment of social forces, existing or to be created, with the objects of the prevention of unnecessary disease and death?

Such in brief are the fairly ambitious questions which Framingham is attempting to solve. If the community is the logical social unit for disease prevention and control, and if the time

* Read at a meeting of the Middlesex South District Medical Society, January 16, 1917.

is right for the application of a complete program for disease prevention and health creation, there is every reason to hope that, in some degree at least, answers to the above questions may be demonstrated. Obviously, the problem is not only one of tuberculosis and not only a health problem; fundamentally it is a problem of social and economic organization.

As announced in the papers and elsewhere, the Framingham Health and Tuberculosis Demonstration is being conducted under the supervision of a committee organized by the National Association for the Study and Prevention of Tuberculosis. On this committee are represented the National Tuberculosis Association, the Massachusetts State Department of Health, the United States Public Health Service, private anti-tuberculosis organizations in Massachusetts, Connecticut, New York and Pennsylvania, and the Metropolitan Life Insurance Company, the donors of the \$100,000 to be devoted to the work.

The selection of Framingham was made after several months' study of numerous communities of similar size in various parts of the United States, but particularly in Massachusetts and New York State. Framingham recommended itself to the committee because it possessed certain average qualities, being an industrial community, with mixed industries, varied racial groups, a good local health organization, backed up by an excellent State Department of Health, a normal amount of disease, particularly tuberculosis, well trained physicians and good hospitals, and sufficient promise of coöperation from medical, industrial, commercial and social organizations to give reasonable assurances of success.

As indicated above, the objects of the investigation are to demonstrate what may be possible with united community action in the problem of prevention and control of tuberculosis. Inevitably the experiment, if it goes forward as planned, will broaden out into a general health demonstration concerning itself with the various disease-preventive problems, as they affect the several age groups, and utilizing in its effort at control all potential agencies,—social, industrial, educational, medical, etc.

Briefly stated, the essentials of the demonstration, as viewed by the committee, are as follows:

1. The sympathetic coöperation of all individuals and organizations, public and private, in Framingham.
2. The execution of the program on an educational, persuasive, and democratic basis, social machinery being devised to carry the various elements in the community organization along with the work as it progresses.
3. The utilization of expert advisory service whenever feasible. This principle applies, of course, to general sanitary, medical, nursing, educational, school or industrial problems.

Before this audience, in presenting, in the

time allowed for this discussion, the important phases of the program, special attention must be paid to the medical and health aspects of the plan. Consequently, only the briefest mention can be made of other significant steps.

It is, of course, essential that for the work a sound statistical basis be laid, involving the acquisition of data making possible a comparison of existing conditions with conditions during the subsequent years of the demonstration, as well as a comparison between the existing conditions in Framingham, now and later, with similar conditions in other communities of similar make-up, thereby furnishing what, in a sense, should prove to be a control for the experiment.

The initial steps contemplated include the following:

1. The carrying out of a thorough and intensive campaign to acquaint the citizens of Framingham with the objects and methods of the demonstration, laying special emphasis on those phases of the program which depend for their success upon the coöperation of the individual citizen. This educational work would naturally lead to efforts to present the main facts on hygienic living, prevention of disease, particularly tuberculosis, etc., the educational campaign culminating eventually in a general propaganda for thorough, universal, medical examinations for the detection of incipient and preventable or controllable cases of disease.
 2. The organization of local committees of a medical and lay character, to coöperate in and advise regarding the work as it proceeds. The plan contemplates not only the organization in this way of leading influential citizens, but also the general selection, possibly on a block basis, of community leaders who will act as agents of interchange between the people themselves and the central committee.
 3. An effort to encourage the Framingham health authorities to meet, through their own appropriations, the logical and legitimate routine health needs of the community, such as public health nursing, medical school inspection and nursing, general health administration, etc.
 4. The efficient coördination of public and private health and charitable work.
 5. A thorough study of community conditions, covering the general sanitary, rural, industrial, school, commercial and office factors, thus assisting the committee in its effort to make a diagnosis of the community health problem, and supplementing the intensive medical canvass to be made subsequently.
- For a complete and successful use of available community agencies, it is obvious that certain mutually beneficial and coöperative relations must be established with the health and medical representatives in Framingham. On the side of health and nursing, the problem in Framingham presents no unusual difficulty. The Board of Health, with the assistance of private agencies

can, with minor adjustments, meet the routine nursing needs. Any extraordinary or experimental nursing or health needs essential to the working out of the program in Framingham will, of course, be met from the Demonstration Fund.

Incidentally, it may be mentioned that the Demonstration budget includes funds appropriated for extra nursing service, for payments to physicians when making thorough medical examinations, for assisting town and private agencies in the provision of adequate medical nursing and relief care for both home and institution cases, etc.

In Framingham, as probably would be the case anywhere, the problems of medical organization are most fundamental, and at the same time, perhaps, most difficult. The success of many phases of the program, including thorough medical examinations, the detection of early cases of disease, etc., depends upon the sympathy and help of the members of the medical profession. Their criticism and approval of numerous steps must be had. Uniform diagnostic standards and methods for the examination and classification of disease are essential to the scientific value of the demonstration. Not only early cases of disease, but suspected and undiagnosed cases must be gotten in touch with and classified, with the assistance of outside expert medical service. The medical work must always be done through the practising physician, in such a way as not to interfere with the normal medical procedure, except in so far as innovations would give assurances of a higher degree of medical efficiency, and greater uniformity in methods of diagnosis and treatment.

A local organized medical agency is necessary to meet these ends. Such a medical group, or club, including in its membership all of the practising physicians on a common basis of co-operation and service, will prove to be a useful piece of community machinery in the adoption of standards, confidential reporting of suspected cases, the use of expert diagnostic service, the approval of popular educational material on hygiene and preventive medicine, etc. Perhaps the chief function of such a medical club will be the development of a course of lectures and clinics, given by the country's first authorities, on tuberculosis and other problems of interest to the Framingham medical profession, placing special emphasis on the detection of incipient disease, and on thorough medical examinations.

If the campaign to urge the people to go to their doctors for thorough medical examinations is a success, here again the intelligent co-operation of the Framingham physicians will be needed. Such a step, of course, is not contemplated in the immediate future, but would follow an initial effort to give complete care to known cases of tuberculosis, as well as any other obvious cases readily discovered through the examination of individuals in contact with known cases. In a thorough medical survey of the com-

munity, however, certain other problems will arise, if the work is to be done on a uniform basis and if it is not to be an excessive burden upon the practising physician. The citizens of Framingham will, of course, be urged to pay what is determined to be a satisfactory fee for the thorough examination. If, however, any members of the community are willing to be examined, but will not meet the expense themselves, this would undoubtedly be considered a legitimate expenditure for the Demonstration Fund.

A thorough medical survey would necessitate the expansion of existing laboratory facilities. The health department laboratory, now doing, with the assistance of the State Laboratory, routine epidemiological work, could perhaps provide facilities for the more ordinary types of clinical laboratory work as well. Many individuals would also be discovered who would fall strictly in the dispensary class, and to meet that need, the existing tuberculosis dispensary might, perhaps, be expanded to include a general medical service, with an open alternating medical attendance, not only for adults, but possibly for school children and factory groups. Such a service might even be placed on a pay, self-supporting basis, and if such a clinic could be developed along the lines indicated, including not only tuberculosis, general medical, school medical, and perhaps dental, but also infant welfare service, there would be created in the community a health center truly worthy of the name.

A final criterion of the success of the experiment will be, of course, the condition existing in health and medical circles, subsequent to the withdrawal of the Demonstration Staff. It is hoped, of course, that there may be established eventually an ideal and adequate health machinery. As a demonstration to other communities, this would seem to be an essential.

Obviously, the immediate results of such a program as is briefly outlined above, if successfully carried out, would include not only a direct benefit to Framingham, but ought to involve a demonstration of the economy and social value of united community organization to meet the problems of preventable disease. It ought, indeed, to throw considerable light upon the most efficient methods for meeting health questions in school, factory and elsewhere. It ought also to be significant perhaps in its bearing upon the future of medical service in general.

The Framingham Health and Tuberculosis Demonstration welcomes your inquiries, suggestions and criticisms, standing as it does, as a unique and unprecedented effort in democratic health creation. It is hoped that the work may point the way to the establishment of a hygienic basis for social organization, a physical foundation without which social, economic, and indeed, spiritual evolution is bound to be abortive.

Therapeutic and Preventive Medicine.

THE DRUG TREATMENT OF MORPHINISM.*

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In discussing this subject my original purpose was to deal with it from its purely medical aspect, but I find it difficult to do so without referring briefly to the sociological side, the two being very intimately related.

The Norfolk State Hospital maintains an outpatient department having offices at various centres throughout the state, with representatives in charge whose business it is to examine applicants for admission, and to determine whether or not the individual is suitable for treatment; in other words, to select so far as possible only such cases as are likely to derive permanent benefit.

Time and space limit the detailed description of cases of this class, and I will merely state in a general way that those whose home environment is free from vicious influences, whose morphinism is not merely an expression of inherent defectivity, and those not showing criminal tendencies, may be considered redeemable through treatment.

It can readily be seen, however, that in a public institution of this nature, the humane consideration of the case must modify our decisions; careful selection is often impossible, and addicts who would not be received at a private hospital or sanitarium must at least be given temporary care. I refer to those who are found to be too poorly equipped mentally fully to appreciate the dangers attendant upon the continued use of the drug, and the necessity of breaking permanently from its use; to the moral delinquent, whose addiction is engrafted on an unstable moral and mental make-up, and to the individual of criminal tendencies, who sees in morphia the necessary support in the plying of his trade. These types constitute about twenty-five per cent. of our admissions, and reduce the number of favorable results in like proportion. Their influence upon others being distinctly bad, provision should be made for their care and restraint independently of the more favorable types.

From March 1st, 1915, which inaugurated the enforcement of the Harrison Law, till October 31st, 1916, a period of twenty months, there have been admitted to the hospital four hundred and sixty-two habitués. Approximately ninety per cent. of these took morphine in quantities varying from five to thirty grains daily, by hypodermic injection, and ten per cent. heroin, two to five grains per day, usually by insufflation.

* Read at a meeting of the Norfolk District Medical Society, on Oct. 31, 1916.

Previous to this our method was that of gradual withdrawal, which required from two to three weeks' confinement upon the receiving ward. The new law created a sudden increase in the number of applicants and it soon became apparent that the reduction method must give place to a shorter one which would relieve the congestion in this department.

Acting upon the theory that scopolamin, by virtue of its effect upon the central nervous system, and through a belief that it could be employed in somewhat the same manner in morphinism as in so-called twilight sleep, we experimented with this drug, with gratifying results to the patient as well as to ourselves.

The various forms of treatment, all of which have their adherents, may be grouped under three headings: gradual, rapid, and immediate withdrawal. Our present method is that of rapid withdrawal, and it may for convenience be divided into two periods: first, that of withdrawal, and second, convalescence.

Our routine is as follows: A mixture containing scopolamin hydrobromide gr. 1-150 and morphine hydrobromide gr. 1-6, is given hypodermically on the evening of the day of arrival, and repeated at intervals of six hours during the first twenty-four. The early effects of scopolamin usually make their appearance during this period and are manifested by marked dryness of the throat, with difficulty in swallowing, dilated pupils with blurred vision, and speech becomes difficult and rather jerky. The patient may now, or perhaps not until the following day, become mildly hallucinated (visual and auditory). In conversation his sentences are apt to be short, sharp and often incomplete, due no doubt to flight of ideas and hallucinatory control.

On the second day the intervals for injection are increased to eight, and on the third day, to twelve hours. In typical cases the depressant effect of the drug (scopolamin) presents itself at about this time, continuing as a rule to some degree through the third and fourth days. This stage is characterized by a sensation of great fatigue and drowsiness; the excitement is greatly reduced and the patient seeks his bed and should obtain sleep of from four to eight hours' duration.

On the fourth day there may be some nervousness and gastric disturbance, but usually no craving for morphia. At bedtime the final dose of the scopolamin-morphine mixture is given, together with fifteen grains of trional. This is almost invariably followed by a comfortable night's sleep, lasting from six to eight hours.

Active purgation is obtained during the withdrawal period, through the liberal use of compound cathartic pills, cascara sagrada and salines. It is of vital importance that the bowels should be made to act thoroughly each day in order to rid the system of morphine and its by-products, but the drastic catharsis recommended

by some authorities does not in our experience appear necessary.

We frequently encounter individuals who fail to respond to the usual physiological effects of scopolamin, and are then obliged to modify our treatment, increasing or decreasing the rapidity with which the injections are made. It often occurs that through an apparent immunity on the part of the individual, the intervals must be reduced to two or three hours until full response to it is obtained, then lengthening the interval as the case may require. About two per cent. of our cases show an idiosyncrasy to scopolamin, which makes it necessary to discontinue its use and resort to treatment by gradual reduction. These show little more than exaggerated throat symptoms and dilatation of the pupils, are exceedingly uncomfortable and are never able to progress as far in their treatment as the depressed phase.

On the whole we are, in the majority of instances, enabled to remove the morphine from the addict's system with reasonable comfort, in a period of about four days, leaving him in fair general condition. At this time what we may term convalescence begins.

There is no specific treatment for morphinism, and no treatment, whatever the procedure adopted, can be successful in its results, unless it is followed by a prolonged period of convalescence. I wish to lay special emphasis upon this point. Many forms of treatment, having much to recommend them in other respects, fail through the neglect of this important detail.

Immediately after withdrawal of morphine, and for a period of several weeks, the individual is nervous, troubled with insomnia, and in a condition wherein he is torn between conflicting emotions; he is impulsive, lacks self-control, and if not restrained, may suddenly disappear. For these reasons we insist upon a ward residence of from one to two weeks.

Improvement in general bodily health is from now on surprisingly rapid and in a few weeks, under tonic treatment, regulated daily routine, proper diet and out-of-door exercise, the insomnia, which is often troublesome during early convalescence, rapidly improves, and the patient appears and acts more like a normal individual. He is now given the opportunity and assistance to build up his resistive powers, strengthen his will and self-control, and readjust his mental attitude toward the use of drugs. A spirit of coöperation should exist between himself and his adviser, who should have his entire confidence.

Following a residence of from six to twelve weeks the individual may now leave the hospital with some assurance of success. His case is now in the hands of the out-patient department which, by timely assistance and advice, may greatly aid in the prevention of relapse.

Clinical Department.

REPORT OF A CASE OF CONGENITAL ALOPECIA.

By J. HARPER BLAISDELL, M.D., AND A. R. CUNNINGHAM, M.D., BOSTON.

PATHOLOGY BY C. J. WHITE, M.D., BOSTON.

THIS case of congenital alopecia appeared at the Children's Medical Clinic of the Boston Dispensary, where it was observed over a period of a month. At this time the mother, knowing that there were no prospects of improvement under treatment, quite excusably neglected to continue her visits. During this time, however, we secured an x-ray of the jaw, a Wassermann test, which was negative, and a fundus examination, also negative. We wish to thank Dr. Charles J. White, professor of dermatology at the Harvard Medical School, for his courtesy in contributing a report of his examination of a biopsy which we took from the patient's scalp.

Stelwagon states that "Congenital alopecia is a rare condition in which the hair may be patchy, or the general hair growth may be scanty, incompletely grown, or downy in character. In exceptional instances the hair has been entirely wanting, and in such cases it is usual also to find defective development of other structures, such as teeth and nails, the latter more rarely." J. N. Hyde¹ and J. Kingsbury² have published comprehensive articles, including analyses of the literature on the subject.

This patient was four years old, white, and has one sister not seen, but stated by the mother to be normal in the development of the hair, teeth and nails. The father and mother are well and know of no other similar case in the family. The patient's mother had one miscarriage one year before his birth and one other child, who died from an unknown cause ten minutes after birth. His maternal grandmother died of cancer. There is no case of tuberculosis or insanity in either branch of the family. The patient was full-term and breast fed; he has been delicate always, and had diphtheria two years ago. He was brought to the clinic because he had only four teeth and almost no hair and in addition he "catches cold easily" and "wets the bed." He was a fairly well developed and nourished boy of normal intelligence. There were four apparently healthy teeth, all in the upper jaw, as seen in the plate. Otherwise there was nothing unusual or abnormal about the mouth or throat, heart, lungs, abdomen, or extremities except for the condition of the skin. Both testicles were descended and there were no herniae.

The report from the dermatological clinic is as follows: The boy had the appearance of an elfish old man that is so characteristic of those without hair, either on the scalp or face. This resemblance was heightened by the lack of teeth and the sunk-in lips.

The hair on the scalp was extremely scanty and consisted of thin, straight shafts about half an inch



apart and one inch long. The scalp itself appeared to be decidedly parchment-like owing to the lack of subcutaneous fat. The eyebrows were represented by six to ten small lanugo hairs. The nails on the fingers and toes were slightly thickened and friable and suggested the conditions so commonly found in the ichthyotics of slight degree. The skin of the entire body presented a mild xerodermatous condition that was accentuated on the face, hands and the extensor surfaces. The horny layer was increased and furfuraceously scaling. The natural lines of cleavage were pronounced. An interesting feature was the absolute lack of any hair follicles and the extreme dryness of the skin as the result of the deficiency in the sebaceous and sweat glands. The child suffered from no subjective symptoms.

The pathological report of Dr. White is as follows:

EPIDERMIS.

The stratum corneum is extremely thin and for long stretches packed into a solid ribbon which for the most part exhibits an affinity for the nuclear stain of polychrome methylin blue.

The stratum granulosum as a normal layer is for the most part wanting. A differentiation between this layer and that of the true spinous cells is very hard to demonstrate; in other words, it is difficult to draw any definite line whatever, for large and small, more or less round cells with centrally placed and well characterized, solidly staining nuclei, surrounded with dense zones of acid-staining granules abound at all levels down to the lower half of the rete.

The stratum spinosum exhibits in its germinate layer a typical picture, but above this level the true spinous cells are of irregular size and emplacement. The layer as a whole is of normal thickness.

CORIUM.

The papillary layer is not remarkable but varies in height in different parts of the section.

The reticular layer presents an extraordinary picture. Great rarefaction of the fibrous tissue is patent everywhere; in fact there is little to choose in density between the two layers of the corium.

The really important and striking features of the case, based on a careful study of ten and eleven serial sections respectively from different parts of the skin, are the following: there are comparatively few vessels; there is one arrector pili muscle; there is one abortive follicle; there is no hair shaft; there are no sebaceous glands; and there are no sweat glands.

REFERENCES.

- ¹ Journal Cutaneous Diseases, 1909, Vol. XXVII, p. 1.
- ² Journal Cutaneous Diseases, 1906, Vol. XXIV, p. 119.

Book Reviews.

The Harvard Medical School and Its Clinical Opportunities. Compiled and Edited by LEROY E. PARKINS, A.B. Boston, 1916.

A small volume of ninety pages attractively bound in red, giving brief historical accounts of the Harvard Medical School and its coöperating hospitals, has been compiled by a student of this medical school. It traces the history of the medical school since its inception in 1782, and gives a careful account of the present buildings, with an exterior and an interior picture and a ground plan. Then follow brief statements of seventeen hospitals situated in Boston and its vicinity whose rich clinical material is available for the use of the medical school, with a picture of each. A statement of the Boston Medical Library and a statistical table correlating the information about the hospitals complete the volume. The book presents in convenient form a simple and concise statement of the advantages for medical study which Boston, and more particularly the Harvard Medical School, offers, combined with a record of the historic interest which centers around many of its old hospitals and medical centers, and as such will, no doubt, find a useful place.

The Practice of Urology. A Surgical Treatise on Genito-Urinary Diseases, including Syphilis. By CHARLES H. CHETWOOD, M.D., LL.D., F.A.C.S.; Professor of Genito-Urinary Surgery, New York Polyclinic. Profusely Illustrated. Second Edition. New York: William Wood and Company. 1916.

The first edition of this book was published three years ago and was reviewed at length, and in commendatory fashion, in this JOURNAL. The present (second) edition is practically identical with the first, some slight changes and additions having been made in the section devoted to the teaching of cystoscopy, and in the technic of various operations. The author has added also a section on "local anesthesia." The general appearance of the book is unchanged, and this second edition merits the approbation and success which its first edition deserved and obtained.

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MEDICAL EXPLOITATION OF THE IMMIGRANT.

IMMIGRANTS offer a rich field for medical exploitation. The foreigner is usually ignorant. he speaks little or no English, and he is unaccustomed to our American ways. Illness, so menacing to any man whose health is his sole capital, has especial terrors for the friendless foreigner. He is, therefore, an easy dupe for the irregular practitioner. Moreover, when he has been fleeced, his shame at being a "greeny" prevents his complaining to the proper authorities, even if he knows who they are. He simply accepts his loss, leaving the exploiter free for further plundering.

Three hundred immigrants crowded the Magistrate's Court at Mulberry Street in New York one morning not many months ago. They had chanced to hear that their doctor had been arrested, and had come to see whether there was any chance of getting their money back. One of the defendants had behind him a record of

twenty years' "successful practice," with institutions in a number of cities, and a record of 250,000 patients on his books. Mr. George W. Whiteside, counsel to the Medical Society of the County of New York and prosecuting attorney, stirred by his long day in court among the helpless victims of the system, declared that "the immigrant's property, his health, his life, are placed in jeopardy by his natural handicaps." He "ought to be the natural ward of the State."

Two bills before the present General Court of Massachusetts are aimed at this evil. One is intended to forewarn the immigrant, the other to eliminate the irregular practitioner. Immigrant conditions have been thoroughly investigated in Massachusetts by a Commission of Inquiry, whose report was published early in 1914. The report contained an account of the present situation, describing the many ways in which the immigrant is exploited and embittered toward the country which, for our own sakes, we ought to teach him to love. It concluded by recommending the establishment of a board whose duty it should be to guard the immigrant from exploitation and to provide him with the information and guidance which would fit him to become a loyal and intelligent American citizen. Senate Bill No. 149 provides for the creation of such a board. The Boston Chamber of Commerce, through its Committee on Americanization of the Immigrant, is urging this bill.

Should such a board be created, one of its important duties would be to protect the immigrant from medical exploitation. To accomplish this, the board must have the coöperation of the Massachusetts Board of Registration in Medicine. The second bill—House 124—would provide this coöperation. It would clothe the Board of Registration in Medicine with power to do what the law already requires it to do—to protect the public against medical exploitation. It would authorize this board to withdraw the license to practise from any registered practitioners who have failed to conform to proper medical standards as already determined by the laws of the Commonwealth. The rights of the practitioner are carefully protected by giving him all proper hearings and other safeguards. This supplementary bill, which is introduced by the Board of Registration in Medicine, merely confers the power which logically should belong to such a board if it is to protect the poor, the ignorant, and the gullible citizen from the many forms of deception and exploitation that are

constantly cropping out in all parts of the State.

For the good name of the medical profession, no less than for the protection of the ignorant public, every physician is urged to consider carefully these two bills and to do all that he can to secure their passage.

SUDHOFF'S COPENHAGEN CODEX.

THE ever-interesting question of the origin of syphilis has been touched on more than once in recent numbers of the JOURNAL, and many readers will remember Dr. Downing's scholarly article and able arguments against the so-called American, or rather Columbian, origin of syphilis in Europe.

The work of Karl Sudhoff in this connection is not generally known in America, though Garrison gives a most interesting account of it in his History of Medicine. Sudhoff is professor of medical history at Leipzig, and director of the Institute of Medical History. For years he has made an intensive study of the origin of syphilis, and combats vigorously the well-known views of Iwan Bloch, who is a firm believer in the Columbian origin of syphilis in Europe. Sudhoff in his researches a few years ago found a manuscript in a library in Copenhagen of the greatest interest in this connection. The article describing this ancient manuscript is entitled, "Mal Franzoso in Italien in der ersten Hälfte des 15. Jahrhunderts," and is of absorbing interest, as it seems to prove definitely that syphilis was present in the Old World before Columbus discovered America in 1492.

The manuscript was written in old Italian, and experts in the interpretation of such papers in Florence definitely fixed the handwriting as belonging to the first part of the fifteenth century. On the manuscript were marginal notes in a different hand, and the date "1465" in Roman numerals.

The manuscript contains long lists of receipts for various ailments, among them being the following two: "elactuatio optimo al mal Franzoso," and "Per fare siropi da male franzoso." These prescriptions, as pointed out by Garrison, contain many of the medicinal substances used by the early writers on syphilis.

The chain of evidence so forcefully woven by Sudhoff in his masterly article is certainly

strong proof of the presence of a certain amount of syphilis in Europe before Columbus' return from America.

EXTENSION COURSES OF THE HARVARD MEDICAL SCHOOL.

IN the issue of the JOURNAL for Oct. 19, 1916 (Vol. clxxv, p. 578), we called attention editorially to the establishment of a plan of extension courses by the coöperation of the local hospitals whereby opportunities for graduate study might be carried to the various medical centers of Massachusetts at a distance from Boston. The first series of these extension courses was given at Springfield, beginning in November, 1916, and has proved a noteworthy success. A second similar series is planned to be given in Worcester during the months of February, March and April.

It will consist of lectures upon selected subjects of special interest to the general practitioner, which will be supplemented by clinical and laboratory demonstrations, made possible by the coöperation of the Worcester Hospitals and their staffs. When possible, case histories will be mailed in advance of each lecture to those taking the course, this being in charge of the Chief Monitor and the Special Monitors for each lecture.

The exercises will be held each Wednesday, beginning January 31, at 7.30 in the evening, and will be of about two hours' duration, the clinical instruction either preceding or following the lecture.

The details of the course are as follows:

1. Dr. Frederick T. Lord, "Diseases of the Lungs and Pleura." Two lectures, on January 31 and February 7. Dr. Ray W. Greene, Special Monitor.
2. Dr. Channing Frothingham, Jr., "Diagnosis, Functional Tests and Treatment of Chronic Nephritis." Two lectures, on February 14 and 21. Dr. L. C. Miller, Special Monitor.
3. Dr. Franklin W. White, "Diagnosis and Treatment of Diseases of the Stomach." Two lectures, on February 28 and March 7. Dr. A. M. Shattuck, Special Monitor.
4. Dr. Joseph H. Pratt, March 14, "Heart Failure, Its Diagnosis and Clinical Aspects." March 21, "Modern Views as to the Treatment of Heart Disease." Dr. T. J. Foley, Special Monitor.

The first two lectures have been already given at the Worcester City Hospital. The remainder will be at places subsequently to be announced. It is a great satisfaction to chronicle the success of the first attempt in university extension work by the Harvard Medical School and to call attention to its future continuance in Worcester and in other cities of the Commonwealth.

It was originally intended to limit the course to thirty, but the Trustees felt that such a limitation was contrary to the spirit of an institution supported by the public. The wisdom of that course was immediately justified by a flood of applications for enrollment, showing conclusively that the profession in this vicinity feels the need of such easily available post-graduate instruction. Evidently the liberal policy of the Graduate School of Medicine of Harvard University in forwarding the scheme of extension centers, finds ready appreciation and is destined to prove of real service to the medical profession, and through them to the community.

THE PERIL OF SMALLPOX.

In last week's issue of the JOURNAL we published, too late for editorial comment, a letter from the president of the Massachusetts Medical Society, calling attention to the continued menace of smallpox from the presence of unvaccinated persons in the community, and the consequent importance and duty for the medical profession to combat the annually recurring attempts to secure the passage of anti-vaccination legislation in this Commonwealth. An excellent and timely illustration in point was the occurrence, on January 28, of a small localized epidemic of seven cases in an unvaccinated family of nine at Stonington, Conn. This family was exposed to a subsequently recognized case of the disease at the home of a friend in a neighboring town, which was visited by two members of the family in question. Between the time of their infection and the recognition of the disease in the Stonington family, a large number of contacts ensued, which has resulted in the necessity of closing the local schools indefinitely, canceling church services and public meetings, re-vaccinating a large number of persons, and placing others under isolation and quarantine. This entire labor, expense and interference with daily occupation might have been pre-

vented by original, compulsory vaccination of the unprotected family. Such episodes are bound constantly to recur in any community not completely protected by vaccination, and the extent and severity of ensuing epidemics depend wholly on the number of unvaccinated persons allowed to exist. If the latter were the only sufferers, their misfortune might be considered in the light of retributive justice, but since the remainder of the community must also suffer inconvenience and expense in addition to the loss of efficiency of the unprotected victims, the reasonable justice and desirability of compulsory universal vaccination become obvious. Physicians everywhere should exert their educational and professional function to prevent the abrogation of our present vaccination laws by the passage of anti-vaccination legislation.

MEDICAL NOTES.

EXPEDITION BY DR. PEARCE.—It is announced that on January 15 Dr. Richard M. Pearce, adviser in medical education to the International Health Board of the Rockefeller Foundation, sailed on an expedition to Argentina and Uruguay to study medical conditions in those countries.

GIFTS FOR MEDICAL EDUCATION.—It is announced that the Jefferson Medical College of Philadelphia has received from Miss Anna J. Magee the sum of \$150,000, to endow the Magee professorship for the practice of medicine and clinical surgery. During the past year the college has also received \$100,000 from Mr. Daniel Baugh, to establish the provost professorship of therapeutics, and an equal sum from other donors to endow the Samuel D. Gross professorship of surgery. It is understood that these gifts were intended to make unnecessary the merging of the Jefferson Medical College with the University of Pennsylvania Medical School.

The University of Chicago has recently received from Mr. C. K. G. Billings and other members of the Billings family \$1,000,000 towards the endowment of its medical school. This money will be used to equip a hospital in connection with the school.

AMERICAN SOCIETY FOR PHARMACOLOGY.—The eighth annual meeting of the American Society of Pharmacology and Experimental Therapeutics was held at the Cornell Medical School, New York City, on December 28 to 30, 1916. Dr. Reid Hunt of Boston, professor of pharmacology and therapeutics in the Harvard Medical School, was elected president for the ensuing year.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.—At a recent meeting of the board of trustees of the American Electro-Therapeutic Association, it was voted that the next annual meeting of the Association would be held on September 11, 12 and 13, 1917, at Atlantic City, N. J.

POLIOMYELITIS IN WEST VIRGINIA.—A report from Fairmount, W. Va., on January 17, states that there is a sporadic epidemic of poliomyelitis in that town and in the adjacent communities of Elkins and Grafton. Up to that date, there had been forty-nine cases and nine deaths. The local public schools have been closed, and general quarantine of affected households established.

LONDON DEATH RATES IN NOVEMBER.—Statistics recently published show that the total death rate of London during the month of November, 1916, was 14.5 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 19.3, in Bermondsey, a populous region on the south bank of the Thames; and the lowest was 10.1, in Hampstead, an open district on the north.

CHANGES IN COST OF DRUGS.—Report from New York on January 9 records a further advance in the cost of opium and various of its preparations.

"The sensational advance, amounting to \$1 per pound, on all varieties of opium, has brought prices to the highest point since prior to 1870. Druggist's quality gum has been advanced to \$14.50, and powdered and granular grades to \$15.50 per pound. Single ounce quotations for morphine have been advanced as follows: acetate, \$7.50; sulphate, \$7.50 to \$7.70; hydrochloride, \$7.50; heroin, \$9.55; and alkaloid, \$10.60. Sulphate and hydrobromide of codeine have advanced to \$8.80; phosphate and salicylate to \$8.25; nitrate, hydrochloride and acetate to \$9.85, and alkaloid to \$10.95. These were single-ounce quotations. Stocks of opium have shrunk to a low ebb in this country, and unprecedentedly high prices are prevailing, despite the fact that domestic consumption is at the lowest point on record."

Further report on January 15 notes also a reduction in the price of bismuth and its salts.

"Manufacturers of bismuth salts have just announced sharp reductions in all preparations, excepting bismuth sub-gallate, which has advanced 5 cents per pound to a basis of \$3.30 to \$3.65 per pound, owing to the increasing scarcity of gallic acid, which has been firmly maintained by makers at \$1.28 to \$1.30 because of scarcity of raw materials and increasing difficulty of domestic production. Freer offerings of bismuth metal, which has been currently quoted in the trade at \$3.10 per pound, are responsible for the reductions. New prices show a decline in bismuth subnitrate of 20 cents to \$2.90 to \$2.95 per pound; a 15-cent reduction

in bismuth subcarbonate to \$3.25 to \$3.50 per pound. Oxide hydrate of bismuth was also reduced 15 cents per pound, while bismuth sub-salicylate, nitrate and crystals were reduced 35 cents, to \$3.65 per pound; a 25-cent reduction was named in bismuth sub-iodide to a basis of \$5 per pound; bismuth salicylate was reduced 50 cents, to \$3.15 per pound; while bismuth oxy-chloride was unchanged at previous quotations."

CONTROL OF HOG CHOLERA.—The United States House of Representatives has recently passed a bill to regulate the treatment of hog cholera in this country by authorizing the department of agriculture to license establishments for the manufacture of antitoxins and sera for the treatment of this and other diseases of domestic animals.

UNITED STATES ARMY DEATH RATE.—The annual report of the chief surgeon of the southern department of the United States Army, published on January 11, at San Antonio, Texas, states that during the last seven months of 1916 there were only 274 deaths among the 150,000 national guardsmen and regular troops mobilized on the Mexican frontier. Of these, 166 were due to disease and 108 to violence. Of the latter, 47 were due to gunshot wounds.

There have been 29 accidental deaths, 19 suicides, 10 drownings and three fatal sunstrokes. Out of the 166 deaths from disease, 41 were due to pneumonia. Thirty-one were from abdominal disease, appendicitis, and internal troubles of that nature. Dysentery claimed eleven men, but only one death from typhoid fever has occurred during the seven months.

OPHTHALMOLOGICAL SERVICE AT BELLEVUE HOSPITAL.—An ophthalmological service has been added to the other departments of Bellevue Hospital, New York. It is located in the new surgical pavilion but is entirely distinct from the rest of the hospital, having its own operating, examining and dressing rooms, a staff of attending surgeons, special internes and nurses; its capacity for the present will be 50 beds. The service is in charge of Dr. Charles H. May, attending surgeon, who will have as his principal assistants Drs. Julius Wolff and John M. Wheeler.

AN IMPORTANT SUPREME COURT DECISION.—On January 8, the United States Supreme Court at Washington, D. C., affirmed the refusal of the federal court in California to enjoin enforcement of the California Medical Practice Law which requires the licensing of so-called drugless practitioners but exempts Christian Scientists.

California's so-called "drugless healer" laws, enacted in 1913, were attacked as unconstitutional in two injunction suits of a Los Angeles chiropractor, and a Los Angeles ophthal-

mologist. No Christian Scientists were parties to the suits, but have been watching them because of the statutes' exemption of Christian Science and other "prayer practitioners" from examination and licensing by the state medical board.

The laws, designed to suppress quack and fake healers, require osteopaths, neuropaths, chiropractors and other so-called drugless healers to have certain physiological knowledge.

Exemption given Christian Science was attacked as unconstitutional in the injunction suits. It was contended that the law gives Christian Scientists a monopoly in "prayer practice," discriminates against drugless practitioners of every school of drugless healing in favor of those using prayer only, is class legislation, and an arbitrary exercise of the state's "police powers."

The California laws, the defending authorities asserted, permit all persons whether drugless practitioners, physicians or Christian Scientists, to treat the sick with prayer. The statutes, they contended, are designed to regulate treatment by material means.

That the state was without power to determine "the particular religious form or ceremony which shall be employed in drugless treatment of disease" or to "distinguish between different religious forms, rites and ceremonies" was contended by those attacking the laws.

In upholding the decision of the California Court the Supreme Court at Washington also dismissed an appeal attacking the validity of the California law regulating the practice of optometry.

LONDON DEATH RATES IN DECEMBER, 1916.—Statistics recently published show that during the month of December, 1916, the total death rate of London was 22.6 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 28.8 in Finsbury, a crowded central slum, and the lowest was 14.7, in the financial district of the city.

AWARD OF WARREN TRIENNIAL PRIZE.—It is announced that the Warren Triennial Prize for 1916, consisting of \$500, has been awarded to D. Nüell Paton of Glasgow, Scotland, for his essay, entitled "The Parathyroids."

UNITED STATES LEPROSY HOSPITAL.—A bill appropriating \$250,000 for a national sanatorium for lepers, already passed by the House, was passed today by the Senate. The institution is to be administered by the public health service, and officers engaged in the work will be given pay and a half.

PROPOSED UNWARRANTABLE LEGISLATION.—Report from Pierre, S. D., on January 29, states

that a bill has been introduced into the legislature of that State providing that every vermiform appendix removed by a surgeon in South Dakota must be sent to the state laboratory for examination, after which it will be returned to the patient from whom it is removed, with a pathological report. If the appendix is not diseased, the patient is released from all financial obligation to the surgeon who removed it.

EUROPEAN WAR NOTES.

MEDICAL SERVICE IN THE SOMME CAMPAIGN.—In the official report recently made by Field Marshall Sir Douglas Haig of the fighting during the past season in the Somme campaign occur the following paragraphs relative to the work of the medical services.

"The losses entailed by the constant fighting threw a specially heavy strain on the medical services. This has been met with the greatest zeal and efficiency. The gallantry and devotion with which officers and men of the regimental medical service and field ambulances have discharged their duties is shown by the large number of the R. A. M. C. and medical corps of the Dominions who have fallen in the field. The work of the medical services behind the front has been no less arduous. The untiring professional zeal and marked ability of the surgical specialists and consulting surgeons combined with the skill and devotion of the medical and nursing staffs, both at the casualty clearing stations in the field and the stationary and general hospitals at the base, have been beyond praise. In this respect also the director-general has on many occasions expressed to me the immense help the British Red Cross Society have been to him in assisting the R. A. M. C. in their work.

"The health of the troops has been most satisfactory, and during the period to which this despatch refers there has been an almost complete absence of wastage due to disease of a preventable nature."

WAR RELIEF FUNDS.—On Feb. 2 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$251,506.88
French Wounded Fund	191,357.38
Armenian Fund	140,819.47
Serbian Fund	108,093.06
French Orphanage Fund	78,218.50
Permanent Blind Fund	68,029.60
Surgical Dressings Fund	60,835.12
Italian Fund	29,289.26
Russian Refugees' Fund	9,605.79

BOSTON AND NEW ENGLAND.

GIFT TO MIDDLESEX COLLEGE.—It is announced by Dr. Charles E. Buck, treasurer of

the board of trustees of the Middlesex College of Medicine and Surgery of Cambridge, Mass., that that organization has recently received the sum of \$350,000 from an anonymous donor "for the enlargement of the college and for scholarships."

JUDGE BAKER FOUNDATION.—There has recently been established in Boston the Judge Harvey H. Baker Foundation, organized to carry on the work of the late Judge Baker of the Boston Juvenile Court. It is announced that Dr. William Healy, who since 1910 has been at the head of the Chicago Juvenile Psychopathic Institute, has been appointed director of the Judge Baker Foundation and will assume his duties on April 1, 1917. Dr. Healy will work in conjunction with Judge Frederick P. Cabot, now in charge of the Boston Juvenile Court, and will make psychologic examinations of children referred to him by the court.

RHODE ISLAND MEDICAL JOURNAL.—With its issue of November, 1916, the *Providence Medical Journal*, which has been in existence since 1899, ceased to exist under that name, but in January, 1917, its publication was resumed under the name of *The Rhode Island Medical Journal* as the property and official organ of the Rhode Island Medical Society. The new journal has conformed to the standard set by other state-owned journals, has increased the size of its page to a double instead of a single column, and has made its title page and contents uniform with other state journals. THE BOSTON MEDICAL AND SURGICAL JOURNAL is glad to extend its cordial greeting to this valued and established publication under its new name and function.

HOSPITAL BEQUESTS.—The will of the late John Martin of Somerville, Mass., which has been filed at the East Cambridge Probate Court, contains bequests of \$1000 each to the St. Mary's Lying-in Hospital and the Free Home for Consumptives, Dorchester, and the Holy Ghost Hospital, Cambridge.

The will of the late George Morrell of Sharon, Mass., which has been filed in the Norfolk Probate Court at Dedham, Mass., establishes a trust fund of \$25,000 for the Massachusetts Homeopathic Hospital; two trust funds of \$30,000 each are also established for personal beneficiaries, after whose death without issue a part of the residue of these funds is to revert to the Massachusetts Homeopathic Hospital, the Industrial School for Crippled Children and the Children's Hospital, Boston.

BOSTON MUNICIPAL COURT MEDICAL SERVICE.—On November 1, 1916, the municipal court of Boston officially established a medical service in conjunction with the court and made the following appointments to the service: Medical di-

rector, Dr. V. V. Anderson; assistant physician, Dr. Christiana Leonard; secretary, Miss Gertrude Barkley.

WEEK'S DEATH RATE IN BOSTON.—During the week ending January 27, 1917, the number of deaths reported was 272, against 323 for the same period last year, with a rate of 18.19, against 22.15 last year. There were 34 deaths under one year of age, against 36 last year, and 112 deaths over 60 years of age, against 118 last year.

The number of cases of principal diseases were: diphtheria, 68; scarlet fever, 29; measles, 74; whooping cough, 3; typhoid fever, 1; tuberculosis, 59.

Included in the above were the following cases of non-residents: diphtheria, 17; scarlet fever, 17; measles, 1; tuberculosis, 3.

Total deaths from these diseases were: diphtheria, 6; scarlet fever, 1; measles, 1; tuberculosis, 17.

Included in the above were the following deaths of non-residents: diphtheria, 2; tuberculosis, 1.

FREE HOSPITAL FOR WOMEN.—The recently published forty-first annual report of the Free Hospital for Women, Brookline, Mass., covers the year from October 1, 1915, to October 1, 1916. During this time 882 patients were admitted to the hospital and of this number 744 were operated upon. Of the number discharged 527 were cured and 113 relieved. There were six deaths. The pathological laboratory examined 1935 specimens and 1560 slides. The training school has graduated sixteen nurses. The out-patient department gave 8124 consultations and received 1920 new patients. Of patients coming to the out-patient department 829 were referred to the hospital.

HOSPITAL BEQUESTS.—The will of the late Mrs. John Hobart of East Bridgewater, Mass., who died recently in Washington, D. C., contains bequests of \$1000 each to the New England Hospital for Women and Children and Boston Nursery for Blind Babies.

The will of the late David G. Pratt of Plymouth, Mass., which was admitted to probate on January 25, contains bequests of \$15,000 each to the Massachusetts General Hospital, the Massachusetts Homeopathic Hospital and the Massachusetts Tuberculosis Sanatorium at Lakeville, the income to be used for the maintenance of free beds in the use of which citizens of Middleboro, Mass., are to have first preference.

BOSTON CITY HOSPITAL.—The recently published fifty-second annual report of the trustees of the Boston City Hospital records the activities and progress of that institution for the year ended January 31, 1916. During this period 16,074 patients were treated at the hospital at an average weekly cost of \$16.36.

"There was collected from paying patients \$94,393.10 for the hospital proper and \$45,164.90 for the South Department. 'This money was paid into the city collector's office and credited by them to the general revenue of the city. If this amount were credited to the hospital appropriation it would reduce the per capita cost per week to the city \$13.12 in the main hospital and to \$7.34 in the South Department.'

"The total expenses of the hospital department were \$725,045.43, but the net cost to the city for maintaining the main hospital was only \$381,305.14. The maximum number of patients in the hospital proper on any one day was 662, as compared with 664 in the previous year. The minimum number was 428, in comparison with 457 for the previous year.

"There were treated in the various out-patient departments 39,351 patients, at a cost of \$32,645.46. A total of 106,698 received the benefit of the hospital in all departments."

Memorial Resolutions.

EDWARD M. BUCKINGHAM, M.D.

THE senior staff of the Boston City Hospital has reason to regret the death of Dr. Edward M. Buckingham, who died on December 23d last.

He served for many years on the medical side and for eight years performed the arduous duties of secretary. His services were particularly valuable at the time of the Spanish war. The City Hospital received a large number of the invalid soldiers who were sent to this city for treatment. The typhoids, malarias, and digestive troubles were of an especially severe type and called for especial care. Dr. Buckingham devoted himself wholeheartedly to the work and published a very excellent report in regard to their maladies when the last soldier was discharged. Although several years have passed since his retirement from active connection with this institution, his valuable work is still remembered and deserves this expression of our appreciation.

We wish to extend to his family our sympathy in their loss and to assure them that their loss is also ours.

CHARLES F. WITHINGTON, M.D.

CHARLES FRANCIS WITHINGTON died January seventh, nineteen hundred and seventeen, and by his death the staff of the Boston City Hospital loses one of its most devoted members. He was visiting physician from eighteen hundred and ninety-two until nineteen hundred and fifteen, when he was appointed a consulting physician.

His long term of service was marked by un-failing interest in the welfare of the hospital

and untiring devotion to his patients. Possessed of unusual knowledge, his opinions were given only after careful examination and attention to the physical signs and symptoms presented by each case. His tact and judgment made him a wise counsellor in the conduct of staff business, and many improvements were inaugurated under his guidance. All who had the privilege of working with him appreciated his keenness of mind, ability as a teacher and skill as a diagnostician.

Always interested in public health measures, Dr. Withington, when relieved of active hospital duty, devoted himself assiduously to the study of legislative acts affecting the welfare of the community and the profession.

Miscellany.

MASSACHUSETTS STATE DEPARTMENT OF HEALTH.

RÉSUMÉ OF COMMUNICABLE DISEASES FOR DECEMBER, 1916.

GENERAL PREVALENCE. The incidence of all the common communicable diseases continues to maintain a lower level than for the corresponding month of last year. This drop is particularly noticeable for typhoid fever, which has been below the average throughout the year.

EPIDEMICS AND OUTBREAKS. *Anterior Poliomyelitis.*—The epidemic of infantile paralysis apparently is now definitely over. Sporadic cases, however, still continue to crop out in widely separated communities.

Diphtheria.—Several outbreaks of this disease have occurred during the month. Gardner reported fifty cases, which were confined to one school. Investigation showed that the source of infection was probably due to contact with unrecognized carriers and active cases. Wholesale culturing and immunizing checked the spread of the disease. Fourteen cases were reported from Webster. These proved not to be milk-borne and were not confined to any particular locality or school. A small outbreak occurred in Holyoke in a hospital ward. Energetic measures were taken and there was no further spread.

Scarlet Fever.—An unusual number of cases of this disease was reported from Westfield during December, totalling 23 and making 59 in all since September. Carelessness on the part of certain families allowed the infection to get a start. The spread was apparently due to contact with unrecognized cases. The city of Worcester showed a total of 46 cases during the month of December, exactly double its endemic index. Unrecognized carriers were, apparently, the cause for the spread of this disease here.

Measles.—A considerable outbreak of this disease is in progress in Fall River. Other cities and towns, as well, share in this undue prevalence, notably Lowell, Framingham, Ayer, Reading, Salisbury, Leominster, Malden and Medford.

DISTRIBUTION. *All Communicable Diseases.*—Total cases: Nov., 1916, 3592; Dec., 1916, 4704; Dec., 1915, 5403.

Case rate per 100,000 population: Nov., 1916, 95.3; Dec., 1916, 124.7; Dec., 1915, 146.5.

COMMON DISEASES. *Diphtheria.*—Total cases: Nov., 1916, 612; Dec., 1916, 775; Dec., 1915, 1019.

Case rate per 100,000 population: Nov., 1916, 16.2; Dec., 1916, 20.3; Dec., 1915, 27.6.

Measles.—Total cases: Nov., 1916, 714; Dec., 1916, 1054; Dec., 1915, 1310.

Case rate per 100,000 population: Nov., 1916, 18.9; Dec., 1916, 27.9; Dec., 1915, 35.5.

Cities and towns which have markedly exceeded their endemic index:

Cambridge	(29)	51
Canton	(0)	8
Quincy	(5)	12
Everett	(5)	16
Methuen	(1)	8
Webster	(1)	17
Gardner	(4)	53
Chicopee	(6)	12
Ludlow	(1)	9
W. Springfield	(0)	6
Fall River	(5)	240
Malden	(6)	33
Reading	(1)	58
Salisbury	(0)	32
Lowell	(10)	109
Medford	(4)	36
Framingham	(3)	134
Ayer	(0)	57
Leominster	(2)	24

Scarlet Fever.—Total cases: Nov., 1916, 390; Dec., 1916, 578; Dec., 1915, 845.

Case rate per 100,000 population: Nov., 1916 10.3; Dec., 1916, 15.3; Dec., 1915, 22.9.

Typhoid Fever.—Total cases: Nov., 1916, 116; Dec., 1916, 79; Dec., 1915, 149.

Case rate per 100,000 population: Nov., 1916, 3.1; Dec., 1916, 2.1; Dec., 1915, 4.0.

Whooping Cough.—Total cases: Nov., 1916, 202; Dec., 1916, 170; Dec., 1915, 760.

Case rate per 100,000 population: Nov., 1916, 5.3; Dec., 1916, 4.5; Dec., 1915, 20.6.

Tuberculosis, Pulmonary.—Total cases: Nov., 1916, 521; Dec., 1916, 678; Dec., 1915, 572.

Case rate per 100,000 population: Nov., 1916, 13.8; Dec., 1916, 17.9; Dec., 1915, 15.5.

Tuberculosis, Other Forms.—Total cases: Nov., 1916, 44; Dec., 1916, 43; Dec., 1915, 50.

Case rate per 100,000 population: Nov., 1916, 1.2; Dec., 1916, 1.1; Dec., 1915, 1.3.

Cities and towns which have markedly exceeded their endemic index:

Dighton	(0)	5
Taunton	(3)	11
Milton	(3)	10
Everett	(8)	17
Woburn	(1)	10
Natick	(1)	10
Westfield	(2)	23
Greenfield	(2)	17
Montague	(2)	10
Springfield	(10)	30
Marion	(0)	5
Lynn	(4)	9
Haverhill	(8)	17
Needham	(0)	39

Rare Diseases.—Anthrax was reported from North Adams (1) and Winchester (1).

Cerebrospinal meningitis was reported from Boston (2), Greenfield (1), Hingham (1), Malden (1), Marlboro (1), Salem (1) and Springfield (2).

Dog-bite (by known or suspected rabid dogs) was reported from Brockton (1), Chelsea (1), Lowell (2), and Needham (1).

Dysentery was reported from Boston (5), Clinton (1), and Fall River (1).

Malaria was reported from Newton (2) and Springfield (1).

Pellagra was reported from Taunton Insane Hospital (1) and from Tewksbury State Infirmary (1).

Septic sore throat was reported from Barnstable (9), Boston (3), Cambridge (1), and Westfield (1).

Smallpox was reported from Boston (1).

Tetanus was reported from Boston (1) and Natick (1).

Trachoma was reported from Attleboro (1), Boston

(6), Chelsea (1), Lawrence (1), Salem (1) and Taunton (1).

Occupational Diseases.—Reported by State Board of Labor and Industries:

DISEASE	OCCUPATION	SEX	AGE	COLOR
Lead poisoning	Painter	M.	39	W.
Lead poisoning	Painter	M.	41	W.
Anthrax	Tanner	M.	30	W.
Lead poisoning	Wire worker	M.	27	W.
Caisson	Lock tender	M.	38	W.
Aniline oil psng.	Tire maker	M.	30	W.
Lead poisoning	Paper hanger	M.	31	W.
Anthrax	Woolen wkr.	M.	16	W.
Lead poisoning	Linotype opr.	M.	45	W.
Lead poisoning	House painter	M.	30	W.
Lead poisoning	House painter	M.	37	W.
Lead poisoning	Wire wkr.	M.	29	W.
Anthrax	Tanner	M.	46	W.
Lead poisoning	Lead wkr.	M.	35	W.
Lead poisoning	Mills bun. boy	M.	19	W.
Lead poisoning	Painter	M.	59	C.
Lead poisoning	Ship building	M.		W.
Lead poisoning	Painter	M.	40	W.

Cases of lead poisoning, 13; cases of anthrax, 3; cases of caisson, 1; cases of aniline oil poisoning, 1; total number of cases, 18.

Correspondence.

THE TREATMENT OF IMPACTED HIP FRACTURE.

New York City, Jan. 7, 1917.

Mr. Editor:—

Re-reading my letter to the JOURNAL in the light of Dr. Cotton's reply, it appears that I did not make my position quite clear.

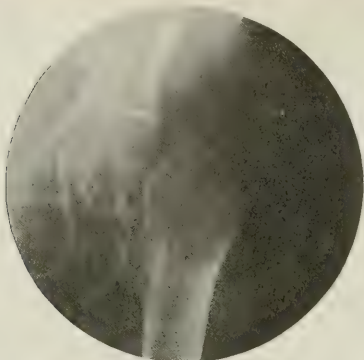
I said that "Dr. Cotton was obsessed by impaction" because he had stated "that 90% of all hip fractures were impacted and that the results were good." "That it was a crime to disturb an impaction in reasonably good position." "That complete fracture of the small part of the neck never united under routine treatment," implying that artificial impaction was the only remedy.

Far from condemning artificial impaction, I think it an important step in the right direction, since whatever may be the actual physical effects of malletting the trochanter, it is preceded by reduction of deformity and followed by fixation of the limb in abduction by a plaster spica. This I consider rational treatment, and I suggested that the same principles should be applied to the more common forms of fracture.

It appears, however, that Dr. Cotton would limit artificial impaction "to the rather small proportion of hip fractures that are loose or hopelessly displaced" and that he "cares nothing for the decision as to other types of fracture because they do not do badly under any form of handling."

It seems to me, on the contrary, that these other types, comprising the majority of the cases, do very badly,—if statistics of final results are to be accepted as evidence,—and primarily because the treatment is inadequate and ineffective in every particular.

The object of treatment of any fracture is to restore the normal contour, to fix the fragments securely and to protect the weak part until function is restored. The chief dependence for security is the mutual pressure of the apposed fragments. In fracture of the neck of the femur they are of small area, lying in a lateral relation, and can be brought end to end only in a horizontal plane.



CASE 1, FIG. 1.
Intracapsular fracture in an elderly subject.



CASE 2, FIG. 2.
Final result of the abduction treatment.



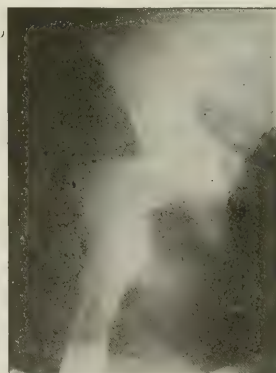
CASE 1, FIG. 2.
Taken through the plaster one month later, showing the security assured by bony contact.



CASE 3, FIG. 1.
Fracture near the base in an adult.



CASE 2, FIG. 1.
Epiphyseal fracture in an adolescent.



CASE 3, FIG. 2.
After reduction. Taken through the plaster.



CASE 4, FIG. 1.

Fracture at the base in a young child.



CASE 4, FIG. 2.

After reduction by the abduction method, showing restoration of the normal angle.

Complete abduction of the limb, after the shortening and outward rotation have been reduced, places the fragments in this plane, and as the capsule is attached about each fragment, the tension incidental to abduction must align them and finally force a contact. In this attitude the muscles are either relaxed or so changed in direction that they are powerless as agents of deformity, and it is only necessary to apply a long plaster spica to hold the limb in complete abduction and complete extension, to maintain this internal splinting and security.

However much the exact position of the fracture may concern prognosis, the principles of treatment are identical.

It should be self evident that the less the capacity for repair, the more essential is accurate apposition and mutual pressure, since repair in fracture of the small part of the neck proceeds in great degree from the cancellous structure unaided by external callus.

The surgeon who treats fracture of the neck of the femur should be held responsible for the opportunity for repair, as it has been defined, for although opportunity may not assure success, want of opportunity makes failure inevitable.

The abduction method from this point of view has very great advantages aside from its technical

adequacy. It permits verification of the position by x-ray examination through the plaster at the time of operation and at intervals thereafter, and, in contrast with any form of traction, it is under the single control of the one who is responsible for the result.

I have always considered the most important of my "alleged data" to be the exposition of the treatment itself, because its adaptation to the mechanism of the joint is as exact as that of Bigelow for the reduction of dislocations. I have therefore been at pains in all the papers that I have written, to demonstrate the method by diagrams and to present cases illustrating, primarily, its comprehensive effectiveness and its range of practicability.

Dr. Cotton has informed the members of the Massachusetts Medical Society that complete abduction is unnecessary although "the abduction position is desirable because it obviates undesirable muscle-contractions." He does not believe "that abduction really locks the fracture, whether by leverage on the acetabular rim or by capsular tension" and finds it "horribly hard to follow an allegation that is so inconstant." I can aid him in his difficulty. He has confounded two distinct procedures. Leverage on the acetabular rim is employed for the correction of resistant deformity of the incomplete or impacted type, including not only those cases with "extreme rotation" and those "in which there is likely to be no real use of the limb," in which Dr. Cotton is interested, but all cases in which the deformity is of a degree to embarrass function, including many of those which he thinks it "a crime to disturb." Capsular tension, on the other hand, is, as has been indicated, the chief dependence in aligning and fixing separated fragments, and its efficiency when properly applied is not a matter of opinion, since, as has been stated, it is capable of direct demonstration by x-ray examination at intervals of weeks or months.

I have said that Dr. Cotton's writings proved that he had not mastered the principles of the abduction treatment, and his letter furnishes further evidence in support of this statement.

In response to Dr. Cotton's suggestion, I present several x-ray pictures illustrating the adaptation of the abduction method to different types of fracture.

1. The locking of complete "true" fracture in a woman seventy years of age, taken through the plaster one month after the application of the treatment.

2. Epiphyseal "true fracture," a type always accompanied by extreme "rotation," reduced by leverage on the acetabular rim.

3. Fracture of the neck treated five weeks after the injury, a type in which leverage, in the sense of fixation of the inner fragment by the superior border of the acetabulum, is essential for reduction.

4. Fracture at the base of the neck in a young child. Showing the advantage of abduction in apposing the separated surfaces.

These cases demonstrate simply what I have called the opportunity for repair, for which alone the surgeon is responsible, and in my opinion there is not one of them which would not have "done badly" under conventional treatment.

This interchange of letters brings to light clearly two contrasting points of view. Dr. Cotton is aggrieved because he feels that I underestimate the relative importance of artificial impaction in a rational scheme of treatment.

I, believing as I do, that the Abduction Method is the only means, in a comprehensive sense, of applying surgical principles,—in other words, of treating fracture of the neck of the femur like other fractures,—feel that the author of a Treatise on Fractures should at least inform himself of the principles of the treatment before delivering the opinion that its proper application is unnecessary.

In this discussion, "involving the welfare of hundreds of patients," to avoid the possibility of error,

I have presented Dr. Cotton's statements in his own words. I trust that if, in the forthcoming edition of his valuable book, he describes the Abduction Treatment, he will be equally scrupulous, in order that his readers may have the opportunity to judge it on its merits.

ROYAL WHITMAN, M.D.

283 Lexington Avenue.

LONDON WAR HOSPITALS.

(From our Special Foreign Correspondent.)

Mr. Editor,—

It has been my privilege to visit, in the last few weeks, some of the larger and more important of the London war hospitals, and I am sure that a brief description of these will not be without interest to the readers of the BOSTON MEDICAL AND SURGICAL JOURNAL. After living in or near London for a few months these military hospitals, which are purely the outgrowth of modern warfare, almost become commonplace and there is a tendency to fit them into the routine of everyday life in the same manner that the Massachusetts General or the City are a part of many of Boston's physicians' daily rounds. Yet when one looks back on a series of visits, they appear so unlike the hospitals of civil life that they do not seem to fit into the general scheme of medical life at all, but are "temporary," exactly the same as the commission which the English doctors receive in the Royal Army Medical Corps; or, more precisely, they exist, as the official record reads, "for the duration of the war." It is not unlikely, however, that they will be needed for some years after peace is declared. This group of medical institutions has sprung up in a few months to meet the pressing demands of the army in Flanders, and has been formed from a variety of sources; namely old hospitals, additions to old buildings, and newly constructed temporary or permanent ones. Many of the older hospital buildings have been pressed into use for military purposes; the staffs are largely recruited from that happy combination of the country practitioner and the West End specialist; the nurses are mostly from the Colonies, Canada contributing the greatest numbers; but it is in the patients that we notice the most marked differences from civil hospital patients in that one finds a group entirely composed of young men—mostly from seventeen to thirty—and, of course, their lesions are the results of war: wounds, "shell shock," *et cetera*, plus the diseases of civil life found in men of that age. The majority of the cases in the general hospitals are surgical, but a few are medical. This picture is quite different, therefore, from the ordinary civil hospital, most notably so in the lack of female patients, children, or the aged, and those with chronic complaints.

But even this narrow field of medicine is not without classification, and the main groups that have resulted from this division are as follows:

1. Wounds of the body, arms or legs.
2. Wounds of the head and brain.
3. Eye wounds.
4. "Shell shock."
5. "Soldier's heart," and
6. A large number of smaller divisions, as injuries of the spinal cord and peripheral nerves, fractures, facial wounds requiring plastic surgery, orthopedic cases, and abdominal wounds.

Also large hospitals are found for the fitting of artificial limbs and for the training of the men in their use, such as the one at Rehampton; there are others for the re-education of the blind. I have seen examples of nearly all of these divisions. The following are a few brief notes on some of them:

Of the big general hospitals of the first class there are many. Some few have been specially built for the purpose, such as the one I shall describe at Clive-

den, near Maidenhead. Others are old non-medical buildings—for example, the town hall at Henley, the schoolhouse at Maidenhead, the large New Examination Schools and part of New College and its gardens at Oxford. Everywhere one goes in the Midlands one finds hospitals like the above with the local doctors giving three or four hours a day from their regular practice, which must suffer in consequence. The hearty general practitioner of two years ago, whose practice was largely pediatrics and obstetrics and who made his rounds behind a slow-going horse, now rides a motorcycle with his wife in a side car, dresses in khaki and commands his ward full of Tommies in a thoroughly military manner.

Cliveden is the Astor estate, twenty miles from London. The enormous country house and its vast parks were offered to the military authorities soon after the outbreak of the war. Now the grounds are one big hospital camp with rows of one-story wooden bungalows, faced with wide piazzas on either side; each house containing 30 to 40 beds making a single ward. Nearly one thousand patients are accommodated—mostly men wounded while in Flanders. Although the staff is entirely Canadian, the doctors and sisters having come over for the duration of the war, the patients are from the four corners of the world and here are found, side by side, men from all parts of the British Isles, Canada, South Africa, New Zealand and Australia, India and elsewhere. A more cosmopolitan gathering could hardly be imagined. Another noticeable thing is the great variety of wounds, for apparently no part of the body from the head to the heels is not open to trauma from the shell or shrapnel. One sees a whole piazza full of amputation cases sunning their flapless, open stumps. In the next ward are found some "shell shock" cases, some dumb, some deaf and others with violent tremors. It was Sir William Osler's visiting day and he had asked Professor C. S. Sherrington and myself to go up from Oxford with him. Most of the time was spent in seeing the neurological cases of which the war has produced a great many. Sir William Osler has pointed out that the "nerve" cases are one of the great problems of the war, especially the functional cases now grouped together by the loose term of "shell shock." The great majority of these cases are now being treated at special hospitals as I shall describe later, so that in a few months a "nerve" case will be practically unknown at Cliveden. The hospital itself consists of the very best type of modern buildings, temporarily raised on a private estate. The operating room and laboratories are excellent and the wards form the most convenient mode of handling a large number of men. The men are brought from the railroad station in motor ambulances where they are quickly looked over by the staff and sent to the operating room, bath or wards. Too much praise cannot be given to the efficient management of this large institution which has practically grown up over night and become an efficient workable military hospital. The men are extremely happy, for they live in the heart of the finest English country, on one of its best estates. Much of the time is spent out of doors, and groups of ambulatory or chair cases may be seen in the nearby woods or on the country roads. Another most important department of the hospital is the training school for convalescents. Land industries are taught by the departmental heads of the Cliveden estate, which include gardening, fence-making, pig keeping, and so on. The workshops train men in carpentering and toy making, and some in cigarette making by machinery. One cannot help but feel that Cliveden stands as the best example of the country base hospital.

Another type of country hospital, but practically in the heart of London, is St. Dunstan's in Regent's Park, London. Here stands, on ten or fifteen acres of the finest park land, a large residence owned by Mr. Otto Kahn. It has been given over for the care

of blind soldiers for the duration of the war. The men here are nearly all totally blind and have recovered from their wounds, the hospital being purely for the re-education of the blind man who has "to learn to be blind." It is, therefore, not a medical institution, but a training school. One is struck immediately on entrance by the exceptional situation of this house, surrounded by its green parks, small lakes and forest trees, and, being on high ground, overlooking all London. In the first week of a man's life here every effort is made to keep up his morale, by cheerful surroundings and sports. The men walk over the fields, row in the ponds, take rides, swim, listen to music, talk and even dance in the evening with the sisters. It is not uncommon to see groups of men talking and laughing in a good-natured way over the experiences of a new arrival who is just taking his first lessons in learning to be blind. In a few weeks a man becomes more or less accustomed to the perpetual darkness and then he seeks employment. The more industrious learn typewriting, at first with raised type on the keys, but later without it. There is a fine spirit of comradeship among the Tommies, and I watched one of the older patients giving a new man his first lesson. The older was as solicitous and persevering as a mother teaching her child its first steps. One is more impressed by the sadness of the war in seeing these end-results at St. Dunstan's than at any other place. Hundreds of men in the third decade are facing the best of their life with this affliction. The hospital also runs a very large shop where men weave baskets and rugs, repair shoes and do joinery. Many of the soldiers become efficient in massage, telephone operating, and, more especially, in poultry farming and market gardening. After a man's training is complete he is given a start in life. A large after-care department sees that each man obtains employment, loans money to start farms, and sends out trained instructors to "follow up" the men in their work. Thus at St. Dunstan's we have a hospital entirely devoted to the post-medical care of the soldier, work which is most essential in solving the severe social problem of the disabled Tommy.

A third type of military hospital is an old building remodelled and added to in order to meet the demands of the existing conditions. Of this type perhaps the best example is the Mt. Vernon Hospital at Hampstead, a few miles from London, which was formerly a research hospital under the National Medical Research Committee, and devoted largely to the study of tuberculosis. It is now given over to the study of "soldier's heart." This institution is situated on high ground near Hampstead Heath, and contains about 200 beds. "Soldier's heart" is a more or less new disease since the war began. The large majority of the patients show cardiac symptoms without demonstrable organic lesions. The typical case of "soldier's heart" presents dyspnea, even when at rest, rapid pulse, slight enlargement of the heart, and visumotor disorders. On exertion there is an abnormal increase in the pulse rate. The treatment by a graduated series of exercises has been very efficient. The hospital also takes patients with organic lesions, many of them showing old lesions which have become augmented by the stress of trench life. There are four services of the hospital under the charge of Dr. T. H. Lewis, Dr. J. C. Meakins, Dr. J. Parkinson and Dr. F. R. Fraser, the latter formerly of the Rockefeller Hospital. Sir William Osler, Sir James Mackenzie and Sir Clifford Allbutt are visiting men. It was a pleasure to find, also, two recent Harvard graduates doing research work under Dr. Fraser. In this hospital the staff is dealing with one of the most perplexing of the new problems that the war has presented. The great mass of data collected from electro-cardiograms and Roentgen plates is being carefully put away and will prove most valuable when there is time to correlate it after the war.

Perhaps the most interesting and remarkable cases

which the war has produced are those of "shell shock." These have become such an important factor in the number of wounded that special hospitals for their treatment have been built. Such a one is the Maudsley Hospital near London, now under the direction of Major F. W. Mott. This building is only two years old and is specially adapted to the treatment of these nervous cases. It compares favorably in both arrangement and equipment with our Psychopathic Hospital, and in many ways reminds me of it. The laboratories for neuropathology are excellent, and it is here that Dr. Mott has concentrated the work of the County Council Hospitals, work that was formerly done in the well known laboratories at Claybury. The wards contained about 400 "shell shock" cases when I made my visit a few weeks ago. Dr. Mott was kind enough to show me through the laboratories and wards and to explain some of the cases. The whole question of "shell shock" is yet to be elucidated, but Dr. Mott feels that the main factors in its causation are the condition of the man at the time and the results of the explosion of the high power shell. The men when wounded are often in a state of fatigue or sometimes exhaustion from the stress of trench life with its anxious tension and the horror of the sights seen. These factors are combined with the great changes in the air pressure at the time of explosion plus the CO gas evolved, and, as many of these men have a history of a neuropathic constitution before the war, it is not remarkable that the nervous system gives way. There are no visible wounds but, in the few cases that have come to post-mortem, multiple punctate hemorrhages have been found in the brain and spinal cord. This is not unlike the condition found in CO poisoning. The symptoms these men present are most protean. Amnesia, terrifying dreams, mutism and headache are the most common. Tremors and paralysis are not uncommon. The details of these cases are well summarized in Major Mott's article in the *Lancet* of February and March of this year. I was shown the officers' quarters, each with a bedroom and sitting-room. The privates live in large wards with recreation rooms connected. A large garden is worked by the patients. The violently insane cases have padded rooms and equipment for packs and baths such as are found at the Psychopathic. Fortunately, most of the "shell shock" cases recover, although some remain in the hospital for months. Dr. Mott's treatment is very conservative. He says:

"Be cheerful and look cheerful is the note that should ever be sounded to these functional cases. Sympathy should not be misplaced, although it should be shown to all these poor fellows who have a fixed idea of never recovering; it is not their fault, it is a real thing to them, and no one could be more grateful than these cases of functional nervous disability for cheery words. I use many of these cases that have recovered as object lessons. I do not find hypnosis or psychoanalysis necessary or even desirable; only common sense and interest in the comfort, welfare and amusement of these neurotic patients are necessary for their recovery."*

These few notes give only the slightest idea of the scope of the work done in England by the Royal Army Medical Corps. The work is an immense task, but I feel sure that no medical group in the world could have responded better than the English doctors have done. Every one is taking some part in this great struggle, and as these men are on call by the military authorities at any time, I feel sure that the damage to their civil practice must be considerable. However, one does not hear complaints from either doctor or patient, and the slogan, "Win the War First," is uppermost in the minds of both.

I am, sir, yours faithfully,

HENRY VIETS.

* *Lancet*, 1916, I, 553.

PENNSYLVANIA CONFERENCE OF PHYSICIANS.

Harrisburg, January 20, 1917.

Mr. Editor:—

I have the honor to extend to every physician a most cordial invitation to attend the Conference of Physicians to be held on Friday, February 16th, 1917, at the State Capitol, Harrisburg, under the auspices of the Division of Industrial Hygiene and Engineering of this Department.

The following program will be presented for the consideration of those attending the Conference:

Chairman, Dr. Francis D. Patterson, Chief, Division of Industrial Hygiene and Engineering, Department of Labor and Industry.

1. "The Relation of the Physician to the Compensation Law and Its Proposed Amendments"—Dr. William Ester, South Bethlehem, Pa., Chairman, Committee of Workmen's Compensation, Medical Society of Pennsylvania.

Discussion by Dr. Charles A. E. Codman, President, Medical Society of Pennsylvania.

2. "Compensation for Industrial Diseases"—Dr. Frederick L. Hoffman, Statistician, Prudential Life Insurance Co., Newark, N. J.

Discussion opened by Dr. Alfred Stengel, Professor of Medicine, University of Pennsylvania, Philadelphia, Pa.

3. "The Dawn of a New Surgical Era—The Carrel-Dakin Treatment of Infected Wounds"—Dr. William O'Neill Sherman, Chief Surgeon, Carnegie Steel Company, Pittsburgh, Pa. (Illustrated by Lantern Slides and Motion Pictures.)

Discussion opened by Dr. J. S. Lawrence, Johns Hopkins University, Baltimore, Md.

4. "Treatment of Fractures of the Long Bones from the Viewpoint of Function"—Dr. Edward Martin, Professor of Surgery, University of Pennsylvania, Philadelphia, Pa. (Illustrated by Lantern Slides.)

Discussion opened by Dr. John B. Lowman, Chief Surgeon, Cambria Steel Company, Johnstown, Pa.

5. "National Standards for First Aid"—Dr. Joseph C. Bloodgood, Associate Professor, Clinical Surgery, Johns Hopkins University, Baltimore, Md.

Discussion opened by Major Robert U. Patterson, Medical Corps, United States Army, Washington, D. C.

MOTION PICTURES.

1. "The House That Jack Built."—Courtesy of Marcus A. Dow, Esq., General Safety Agent, New York Central Lines.

2. "The Curse of the Forest."—Courtesy of Honorable Robert S. Conklin, Commissioner of Forestry, Commonwealth of Pennsylvania.

Our General Assembly is now in session and amendments to the present Workmen's Compensation Law and the question of compensation for industrial disease are of great importance at this time and will be thoroughly discussed.

Dr. Sherman and Dr. Lawrence have just returned from Europe, and have brought with them much information in regard to the Carrel-Dakin treatment of infected wounds, which is considered by many to be the greatest advance in medical science since the discovery of antiseptic surgery.

The splendid work of Dr. Martin and his colleagues in the American Surgical Association, upon the subject of the treatment of fractures of the long bones, will prove of much interest to those as yet unfamiliar with the conservation of function which follows the proper methods of treatment of such cases.

Standardization of first-aid treatment is an important factor in the prevention of infection, and Dr. Bloodgood will tell of the work of his committee in their nation-wide study of conditions and practice.

It is my hope that the members of the medical profession will be able to cooperate with this Department by having a large representation present at this Conference and, so that the necessary seating ar-

rangements can be made, I shall be appreciative of your courtesy if you will promptly furnish me with the names and addresses of those who will be present and I shall then have the pleasure of forwarding them personal invitations.

Thanking you in advance for your courtesy and cooperation, I am,

Yours faithfully,

JOHN PRICE JACKSON, *Commissioner,*
Commonwealth of Pennsylvania,
Department of Labor and Industry.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Surgical Section will be held on Wednesday evening, February 14, 1917, at 8.15 P.M., at the Medical Library. The general subject of the evening will be Lung Surgery.

The Surgical Treatment of Bronchiectasis and Advanced Pulmonary Tuberculosis: Dr. Willy Meyer, Professor of Surgery in the New York Post Graduate Medical School and Hospital.

Discussion by:

Dr. Frederick T. Lord
Dr. John B. Hawes
Dr. G. M. Balboni
Dr. George W. Holmes
Dr. Samuel Robinson
Dr. C. L. Scudder

W. J. MINTER, M.D., CHARLES L. SCUDDER, M.D.,
Secretary. *Chairman.*

THE MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.—The next meeting will be held at the Hotel Brunswick, Thursday, February 15, 1917, at 7.45 P.M. Mr. David H. Holmes, Director of Massage and Exercise at the McLean Hospital, will address the Society on "Massage and Exercises for the Insane." Miss Lena D. Swinerton, Superintendent of Physical Training and Massage at the Perkins Institution for the Blind, will address the Society on "Treatment of Some of the Postural Defects and Habit Motions Common to the Blind."

DOUGLAS GRAHAM, M.D., *President*
MRS. MABEL F. WALKER, *Secretary*

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY.—The next meeting of the New England Ophthalmological Society will be held at the Massachusetts Charitable Eye and Ear Infirmary, 233 Charles Street, Boston, on Tuesday evening, February 13, 1917, at eight o'clock.

At the annual meeting, held January 9, 1917, the following officers were elected: President, Dr. Henry H. Haskell; Vice-President, Dr. Ralph Carleton; Secretary-Treasurer, Dr. W. Holbrook Lowell.

PROGRAM

Hospital Cases:

American Board for Ophthalmic Examinations,
Dr. Walter B. Lancaster.
Glioma Retinae et Atrophia Bulbi, Dr. D. F. O'Connor.
Ocular Changes in Raynaud's Disease,
Dr. George S. Derby.

(By invitation)

Fibrolysin in the Treatment of Ocular Diseases,
Dr. Robert Scott Lamb, Washington, D. C.

There will be a joint meeting of the New England Ophthalmological Society and the Boston Society of Psychiatry and Neurology on Thursday, April 12, 1917.
W. HOLBROOK, LOWELL, *Secretary.*

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

February 15, 1917

ORIGINAL ARTICLES

ACIDOSIS: A SUMMARY OF RECENT KNOWLEDGE. <i>By James L. Whitney, M.D., San Francisco.</i>	225
CHRONIC CARBON MONOXIDE INHALATION AND SOME OF ITS UN- TOWARD RESULTS. <i>By William J. McGurn, M.D., Boston.</i>	231
THE EPIDEMIOLOGY OF ANTERIOR POLIOMYELITIS: EPIDEMICS, 1916. <i>By D. M. Lewis, M.D., New Haven, Conn.</i>	234
FAT EMBOLISM A CAUSE OF SHOCK. <i>By W. T. Porter, M.D., Boston.</i>	248
SHOCKLESS SURGERY. PARAVERTEBRAL ANESTHESIA WITH SCOPOL- AMINE AND NARCOPHINE: A PRELIMINARY REPORT. <i>By J. R. Kimpton, M.D., Boston.</i>	248
INDUSTRIAL HEALTH INSURANCE	
MEDICAL SERVICES AND MEDICAL AND HOSPITAL FEES UNDER WORKMEN'S COMPENSATION. <i>By Francis D. Donoghue, M.D., Boston.</i>	235
PHYSICAL EXAMINATION AND MEDICAL SUPERVISION OF FACTORY EMPLOYEES. <i>By W. Irving Clark, M.D., Worcester, Mass.</i>	249
THE FALLACIOUS SOCIAL PHILOSOPHY OF HEALTH INSURANCE. <i>By Frank F. Dresser, Worcester, Mass.</i>	244
CLINICAL DEPARTMENT	
AN INTERESTING TONSIL. <i>By Joseph Frenn, M.D., Boston.</i>	249

BOOK REVIEWS

Mentally Deficient Children. <i>By G. E. Shuttleworth, M.D., and W. A. Potts, M.D.</i>	250
Progressive Medicine. Edited by Hobart Aubrey Hare, M.D., and Leighton F. Appleman, M.D.	250

EDITORIALS

THE SHADOW OF WAR.	251
INDUSTRIAL HEALTH INSURANCE.	251
ITALIATIC LESIONS AMONG CIVIL WAR VETERANS.	251
MEDICAL NOTES.	252

CORRESPONDENCE

INDUSTRIAL HEALTH INSURANCE. <i>I. M. Rubinow, M.D.</i>	257
THE YOUNG BILL. <i>John J. Hurley, M.D.</i>	257
WORKMEN'S INSURANCE IN GERMANY. <i>G. E. Whitcomb, M.D.</i>	258

MISCELLANY

WASHINGTON CONFERENCE ON SOCIAL INSURANCE.	253
WORKMEN'S COMPENSATION IN THE UNITED STATES.	255
NOTICES, RECENT DEATHS, ETC.	258

Original Articles.

ACIDOSIS: A SUMMARY OF RECENT KNOWLEDGE.*

By JAMES L. WHITNEY, M.D., SAN FRANCISCO.

[From the Department of Medicine, University of California.]

It is known by the researches of the last two or three years that acidosis is an extremely common condition. As a physiological and beneficent reflex, it occurs after violent exercise and from exposure to an atmosphere of low oxygen tension, as on mountain-tops. But it is also found as a more or less noxious complication in a number of diseases. Those forms where the acids involved belong to the ketone group have long been recognized: in diabetes, in starvation, after surgical operations, in cyclic vomiting, diarrhea, and certain infections of childhood. Much more recently it has been shown that this condition also occurs in nephritis, and other diseases of the kidney, in decompensated heart lesions, in pneumonia, in asphyxia, as from gas poisoning, in anemia, and in pregnancy. The researches which have established these facts have for the most part not yet appeared in any text-book.

DEFINITION OF ACIDOSIS.

Acidosis may be defined as an increase above normal of any of the acid elements of the blood. This does not necessarily mean that the reaction

* Read at a meeting of the University Hospital Medical Society, San Francisco, Sept. 7, 1916.

of the blood as a whole is appreciably altered. An increase in the acid phosphate or in the organic acids of the blood will be up to a certain point promptly and completely compensated by a loss of the carbonic acid complement, so that the chemical reaction of the blood as a whole remains normal, or so nearly so that the difference cannot be measured. This compensation takes place through respiration. The action of the respiratory center is governed by the reaction of the blood, any increase in acidity causing stimulation to breathing. This, in return, washes out an increased amount of CO₂, and reduces the acidity to the normal level again. The term "acidosis," then, ordinarily implies only that the non-volatile acids (usually acid phosphate or organic acids) are increased, while the acid carbonate (bicarbonate) and carbonic acid are in compensation reduced.

The reaction of the blood is usually expressed in terms of the hydrogen-ion-concentration, that is, the quantity of free acid radicals present. There is in every watery solution, or even in pure water, certain concentration of such acid ions, which can be measured by appropriate methods. Blood, having a less number than distilled water, is properly considered alkaline, so that the term "hydrogen-ion-concentration" as applied to the condition of the blood is preferable to that of "acidity," though the latter would hardly be a misnomer.

PHYSIOLOGY OF ACID REGULATION.

To understand the nature of acidosis, we must know the physiology of the maintenance of a constant chemical reaction in the body. First,

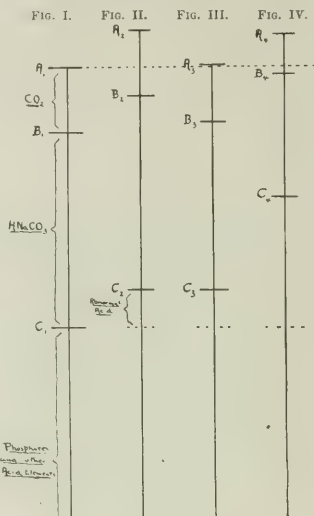
the blood, and in fact the whole mass of body tissue, must be studied from this point of view. Second, the respiration, as the ready and quickly acting means of adjustment to any change. Third, the kidney also participates, much more slowly, by keeping the salts and non-volatile acids of the blood at a singularly constant level.

The physical chemistry of the blood as a medium for adjustment of chemical reaction has been worked out by L. J. Henderson¹ and his associates in an admirable series of articles. The blood is to be conceived of, in accordance with the modern theories of ionization, as a beautifully balanced complex of chemical radicals, all to a greater or lesser degree in the form of ions. The latter consist of the alkaline radicals, K, Na, Ca, Mg, other minerals in small amounts, and NH_4 , and the acid radicals, chlorides, sulfates, phosphates, some other mineral acids, carbonates, carbonic acid and various organic acids, such as lactic, diacetic, etc. Of the salts which affect the reaction of the blood, those in greatest amount are the phosphates (Na_2PO_4 , HNa_2PO_4 , H_2NaPO_4), carbonates (Na_2CO_3 , HNaCO_3), and free carbonic acid. These bodies are so much the most important that no great error is involved in looking upon the blood as a solution of these salts alone. Henderson has shown that this mixture is such that considerable additions of acid or alkali change its ionic concentration to an extremely small extent. This is due to the low degree of ionization of the radicals present, which though un-ionized are still capable of binding a considerable number of added free ions without great change in reaction being brought about. The albumins of the blood also damp any change of reaction to a considerable extent, as Robertson² has shown. The degree of this resistance to change in reaction is sometimes referred to as the "buffer-value" of the blood. It must be remembered, however, that every addition of acid or alkali to the blood does cause some change in reaction, even though small, and this "buffer-value" represents the limits of extremely reluctant change rather than a limit within which there is no change at all.

Any addition of acid to this complex causes a shifting in the balance of all the members present: some of the alkaline phosphate becomes acid phosphate, and at the same time the carbonate becomes bicarbonate, and some of the bicarbonate loses its alkali and becomes carbonic acid. That is, the net result of this shifting all along the line is that there is, for the time being, more free CO_2 dissolved in the blood. This increase of the acid elements, of course, stimulates the respiratory center, with increase in ventilation, and the extra CO_2 which has been formed is almost instantly washed out through the lungs, and the H-ion concentration reduced again to the normal figure.

The mechanism may be illustrated by a dia-

gram, which, of course, must not be taken too literally as an exact representation of chemical facts. In Figure I let A_1B_1 represent the dis-



solved CO_2 , or the divalent CO_3 ion. B_1C_1 represents the bicarbonate, and the line below C_1 the three phosphate radicals and all other acid substances. For a given set of conditions these quantities will be proportional according to physico-chemical laws, which are explained by Henderson. A change in one quantity will bring about a change in all. Thus, if there is added an acid, such as lactic (Fig. II) the line C_1 will rise to C_2 , and B_1 and A_1 will rise to B_2 and A_2 respectively. This rise of the total acid to a line above the normal, stimulates the respiratory center, and the excess of CO_2 is quickly removed, bringing the line A_2 back to its normal line, or so nearly so that the difference is not measurable. As the extra CO_2 goes out, there is further interchange of H-ions from the phosphates toward the carbonates, and the level of B will be correspondingly shifted. Any such condition as Fig. II, therefore, would be unstable and, as a matter of fact, could hardly occur at all, since the increase of acid takes place gradually, and the excretion of CO_2 would so fully keep pace with it that the line A never gets appreciably above its normal level. Figure III represents the ordinary condition in acidosis.[†]

At this stage the kidney begins its work, which is to keep the non-volatile ions at the constant level C_1 , so that, normally, within the next hour or so, enough acid phosphate or other

[†] The completeness of this compensation in all but the most extreme grades of acidosis is shown by the results of Peabody,³ as well as others, who, using direct electrical measurement, found a practically normal H-ion concentration in almost all cases of acidosis. Many of the writers on acidosis, however, seem to have failed to realize the completeness of this compensatory mechanism.

acid will have been excreted in the urine to bring the line C_3 back to the normal threshold of C_1 (assuming, of course, that the addition of acid does not continue), and at the same time A and B will return to their normal location.

The importance of this function of the kidney in maintaining the reaction of the blood has only lately been realized, as well as its rapidity and delicacy of action. The kidney has the singular power of withdrawing acid radicals from an alkaline medium and excreting them in the acid urine. The radicals thus withdrawn consist, to a large extent, of the acid phosphates, though, if the acid production of the body is low, the alkaline phosphate and even the bicarbonate will appear, and the urine may thus be alkaline. It is to be borne in mind that the kidney is not merely excreting the various salts as they come to it. It is definitely maintaining a threshold value for acids; above this threshold acid ions will be passed out; below the threshold, in similar fashion, enough alkali will be excreted to keep up to the normal. It has been found that though this level of the acid salts in the blood varies somewhat between individuals, it remains remarkably constant in the same person. Also the total acid and therefore, of course, the amount of dissolved CO_2 remain constant in the same subject over many years.

The amount of alkali radical which is available to neutralize acid (*i.e.*, the tri- and disodium phosphate and the carbonates) is sometimes referred to as the "alkali reserve."⁴ Such a value would be represented approximately by the line BC in the figure.

This represents the method of compensation for acidosis, and in the ordinary case it is fully successful in keeping A (the total H-ion concentration) practically at its normal level.

Strictly speaking, it is incorrect to say that the acid level (A) returns absolutely to the normal. A balance must be struck where the respiration is enough increased to keep the CO_2 at a less concentration than usual, and this increased respiratory activity implies some increase in the H-ion concentration. But the respiratory center is so extremely sensitive that this increase is ordinarily below the limits of measurement.

Of course there is a limit to the powers of this compensatory mechanism. Figure IV represents a condition which occurs only in the most extreme forms of acidosis (usually near death), where the level of C has become so high that the most energetic breathing cannot keep the CO_2 and the carbonate level below that of the normal total acid.

SOURCE OF THE ACID IN THE BLOOD.

A word should be said as to the source of the various radicals in the blood. Of the alkali radicals, the minerals are, of course, derived from the food in considerable excess, so that there is constant excretion in the urine. Neutral salts with stable acid radicals have little

effect on the reaction of the blood or urine, since the ions are balanced. Carbonates, however, or organic salts of alkalis which mostly break down into carbonates, add to the alkalinity of the body, since the CO_2 readily leaves by the lungs, and the alkali ion is left. If acid production be above the capability of the mineral radicals to handle, a store of ammonia is utilized by a change in protein catabolism, viz: less urea $CO \begin{matrix} -NH_2 \\ -NH_2 \end{matrix}$ is produced, and instead, one or two less H_2O molecules are abstracted from the protein end-products, with the production of ammonium carbamate $CO \begin{matrix} -ONH_2 \\ -NH_2 \end{matrix}$ or ammonium carbonate $CO \begin{matrix} -ONH_2 \\ -ONH_2 \end{matrix}$. If all the ammonia which can be got by proteid catabolism be utilized to neutralize acid radicals, there appears to be no further alkali asset, and the ability of the kidney to excrete acid as such is the only resource in preventing the acidosis from increasing to a fatal degree.

The acid radicals come normally to some extent from bodily catabolism, but largely from the food. Meat is the great acid producer, vegetable diet showing a considerable excess on the alkaline side. Bodily catabolism in health probably produces little acid excess, as is shown by the frequent occurrence of alkaline urine, even on a diet which contains some meat.[‡]

Under abnormal conditions, however, there is often considerable acid production by bodily catabolism. Acid products always result from deficient oxidation. When muscles are exercised vigorously the oxygen supply may not be fully sufficient, and lactic acid is the resulting end-product, instead of CO_2 , as normally. Lactic acid has actually been demonstrated in blood and urine after moderately vigorous exercise.⁵ Similarly, there is imperfect oxygenation in the first hours at considerable altitudes (mountain sickness), and here also acidosis has been found, which at first is probably due to lactic acid.⁶ Again, lack of carbohydrate participation in the catabolism of fats gives a considerable quantity of diacetic and B-oxybutyric acid. These acids are, therefore, found in diabetes and in starvation. The reason for the production of the same acids in the cyclic vomiting of childhood and after anesthesia is not well understood.

The teleological significance of acidosis in conditions of poor oxygen supply is evident. Deficient oxidation brings the reflex of increased respiration, with improvement in the oxygen supply. Barcroft⁷ demonstrated that the members of a party on a mountain trip who got a prompt and considerable acidosis, were comfortable and able to do vigorous exercise, while certain others who were more or less prostrated showed much less acid in the blood.

[‡] This was shown by the fact (not yet published) that dogs do not necessarily develop any acidosis after nephrectomy. If the acid production were great they ought, in consequence of failure of elimination, to succumb to a prompt acidosis.

Acidosis may arise in two ways, and the distinction is important: 1. By an overproduction of acid, with which the kidney is unable to keep pace. 2. By failure of the kidney to excrete the normal amount of acid, even without overproduction,—that is, a failure to maintain the threshold at its normal level. This may result from incompetence of the kidney, as in nephritis, but there is also evidence to show that a perfectly normal kidney may at times establish a new threshold value for acid, often with a physiological purpose in view.⁸ For instance, it has been pointed out that in mountain sickness there is oxygen deficiency in the tissues, and production of lactic acid. It might be expected that one of two things would happen in the hours following ascent of a mountain,—either the lactic acid would be excreted and the acid level subside, or that the poor oxygenation would continue, with constant production of lactic acid, and a constant state of mountain sickness. As a matter of fact, the acidosis continues to increase for weeks, as was shown very definitely on the Oxford-Yale Pike's Peak expedition,⁹ and finally becomes permanently high. But the individual soon recovers from his early indisposition, and is in excellent health. At the same time all but traces of the lactic acid disappear from blood and urine. The only way to explain this fact is to assume that the kidney has decided, for a physiological purpose, to maintain the acid threshold at a higher level than formerly.

In an acidosis of the overproduction type, the urine will, of course, show the excretion of large amounts of acid, sometimes of an identifiable variety, as diacetic or lactic, and will give the tell-tale high ammonia quotient. In the other type, however, that due to retention of acid either from kidney insufficiency or from raised threshold, the urine need show no change from normal conditions. This is the explanation of the former divergence of opinion as to the existence of acidosis in a number of conditions such as pregnancy, nephritis, pneumonia,—where blood and alveolar air analyses indicate acidosis, but the urine shows nothing.

A word should be said as to tissue acidosis as distinguished from blood acidosis. The acid is, of course, produced in the tissues and carried off in the blood, therefore there will be a gradient from tissues to blood, and, of course, a higher level in the former. On the basis of a supposed extreme degree of tissue acidosis, Martin Fischer¹⁰ has built an elaborate theory, by which he seeks to explain the most diverse phenomena. While his writings are interesting and stimulating to further research, it must be said that the proof is as yet far from sufficient to warrant their acceptance as a whole.

DEMONSTRATION OF ACIDOSIS.

The most prominent symptom of acidosis is hyperpnea, ranging from a slight increase in

lung-ventilation to a marked air-hunger. Later there is coma, respiratory paralysis, and death. Recent researches have demonstrated rather unexpectedly that there is some acidosis present in most cases showing hyperpnea without exertion, though there are a number of other causes which can give the same effect, as nervousness, high temperature, pulmonary congestion, etc. The presence of hyperpnea may then be taken as *prima facie* evidence of acidosis, which, of course, requires further confirmation. It is possible that with the growth of knowledge on this subject we shall eventually be able to make a correct diagnosis in the majority of cases by inspection alone.

Aside from the mere observation of hyperpnea, tests for acidosis fall into three classes,—urinary and blood analyses, and respiratory data. Urinalysis is serviceable where there is increased acid excretion, and especially where the acid is identified as the group giving the ferric chlorid reaction. The increased ammonia quotient is also of value when present, but its absence by no means rules out an acidosis due to retention. Estimation of the acidity of twenty-four hour urine and of the balance between carbonates, phosphates, etc., has been carefully studied by Henderson and his associates,¹¹ but seems likely to be of scientific rather than clinical value, because of the failure of the kidney to behave normally in a considerable proportion of the acidosis cases. Sellards¹² proposed a method of administering bicarbonate by mouth until the urine became alkaline, that establishing what he calls alkali tolerance. Normally the urine becomes alkaline after 5-10 gms. of the salt, but in certain cases of acidosis over 100 gms. were required. This method again is chiefly useful in cases of the overproduction type, and could hardly be used in any case on a very sick patient, as there is probably great danger in raising the concentration of salts in the blood above the normal level. Further, the retention of alkali by a diseased kidney may not be wholly due to excess of acid, and need not be proportional with it.

Of respiratory data the most important is the determination of CO_2 in the alveolar air, that is to say, the air at the bottom of the lungs, undiluted by outside air. This depends on the fact that the air in the alveoli of the lungs comes almost instantly into equilibrium with the gas tensions of the arterial blood.[§] The determination of the alveolar CO_2 would, therefore, amount to the estimation of the CO_2 in the blood, or the value AB in the figures. This value is, of course, low in acidosis, and is inversely proportional to its degree. Normally the CO_2 tension in alveolar air and arterial blood is about 40 mm. Hg., but readings below 10 have been obtained near death from diabetic

[§] The tension of CO_2 in the expired or the alveolar air must not be confused with total CO_2 output. In most conditions of hyperpnea the percentage in the expired air is low, but as a larger amount of air is expired, the output may be normal or even increased.

coma.¹³ Although analyses of the alveolar air have to be carried out carefully and with due respect to certain sources of error, they are reliable, and may be applied to almost any patient, and ought to be even more widely employed than they now are. Of the numerous methods used to obtain this value, none has proved so accurate and serviceable as the original one of Haldane and Priestly.¹⁴

Of the methods involving the blood, it may be said that direct analysis has been employed (by Ryffel⁵) only for the estimation of lactic acid. Electrical measurement of H-ion concentration by a hydrogen electrode has been extensively employed by Sörensen,¹⁵ Hasselbalch,¹⁶ and in this country by Peabody,³ and others. As already pointed out, this gives only the total acidity of the blood, which is practically always normal, that is, the level of A, not of B or C, which is the data desired in this connection. Moreover, the method is very difficult, rather inaccurate, and requires expensive apparatus.

A method involving dialysis and colorimetry of the dialysate proposed by Levy, Rowntree and Marriott¹⁷ is theoretically open to objection, because the dialysate will not necessarily have a reaction that is proportional to that of the original blood. In the first publications of the method, the vitally important CO₂ content was entirely neglected, no effort being made either to keep the CO₂ in or to get it all out. This method, however, has led, in the hands of its originators, to some interesting results, which are apparently reliable.

Barcroft¹⁸ showed that the reaction of the blood markedly affects the ability of the hemoglobin to unite with oxygen. In a more acid medium the hemoglobin will bind less oxygen. He has devised a method based on this fact, which has been widely used by English physiologists. He exposes the specimen of blood to an atmosphere of a definite oxygen tension, and then estimates the percentage saturation of the hemoglobin. In conditions of acidosis this will be low. The range of variation is wide, and the method is faultless in theory, but it is difficult and must be performed by an expert with special apparatus. By this method all the fundamental work on the acidosis of exercise¹⁹ and of high altitudes²⁰ was performed, as well as the very important first demonstration of the acidosis of nephritis.²¹

Finally, the Van Slyke method²² of estimating the total carbonates of the blood appeared only last fall, and because of its theoretical correctness, and the ease and accuracy of its accomplishment, is sure to be very widely adopted, not only for scientific, but for clinical purposes as well. It at present stands as both the easiest and the most accurate method of establishing the existence of acidosis. Blood is withdrawn from a vein, and the plasma removed. This after exposure to air of a definite CO₂ tension is transferred to a simple apparatus, where, after

addition of acid to break up the carbonates, a Torricellian vacuum is produced and, after shaking, the amount of CO₂ evolved is measured directly. According to the figure, the value AC is the one determined, and this is, of course, inversely proportional to the acidosis. The normal content of the blood, expressed as volume per cent. of CO₂, is about 60 to 70. Anything below 50 suggests acidosis. We have frequently got readings well below 20.

As the line AB is a function of AC, the alveolar CO₂ can also be reckoned with considerable accuracy from the Van Slyke reading.

OCCURRENCE OF ACIDOSIS.

The conditions in which acidosis has been demonstrated may be roughly divided into general classes. First, those with over-production of acid, due to deficient oxygenation. These include severe exercise,¹⁹ mountain sickness,²⁰ probably acute anemias, gas poisoning,²³ and other forms of asphyxia. The moderate acidosis which may develop in cases of decompensated heart lesions, or of poor circulation in general, belongs in this class, though the accompanying passive congestion of the kidney may lead to some renal insufficiency as well, and so failure to keep the acid threshold normal. Second, conditions where a primary lack of oxygen leads to a compensatory raising of the threshold for acid,—the acidosis of high altitudes,¹⁹ probably of pregnancy.²⁴ Third, metabolic conditions, where abnormal acids are produced in large amount,—diabetes, starvation, post-operative toxemia, and the diarrheas and cyclic vomiting of children.²⁵ With regard to the last it may be remarked that the acid threshold in children is normally higher than in adults. Readings by the Van Slyke method as low as 45 are considered normal in children. They are also particularly subject to the development of acidosis on relatively slight provocation, as after operations, in slight infections, etc.

A fourth class includes cases where kidney insufficiency is the deciding factor. It is now recognized, since the work of Lewis, Barcroft and associates,²¹ already abundantly confirmed by others, that acidosis is not only common in nephritis, but is almost invariable at certain stages of the severe types. A case of granular kidney recently seen in the University Hospital showed a picture perfectly typical of diabetic coma, and was considered as such until urinalysis showed no sugar, but albumin and casts. The dyspnea of nephritis usually appears in characteristic paroxysms, especially at night. It seems probable, therefore, that the ability of the kidney to handle acids fluctuates, though a fluctuation in the acid production may also occur. At any rate these periodic attacks of dyspnea seem to be the result of a temporary acidosis. Cheyne-Stokes breathing is also usually accompanied by acidosis, though the exact mechanism of its production is not as yet clear.

An intense acidosis will be found in cases of pure kidney,—in fact, the two most marked cases which I have encountered have been of this nature. A high grade of acidosis may accompany pneumonia²⁶ and be the cause of the characteristic hyperpnea. This may be considered as a case of renal insufficiency due to the intoxication, though it may later be discovered that there is merely a shift of the threshold to a higher but definitely maintained level. There is no reason to suppose that there is any great overproduction of acid. It is an interesting fact that the dyspnea in pneumonia ceases abruptly within an hour or so after the crisis—in just about the time necessary for the kidney to eliminate the excess acid and bring the threshold to its old level. It is possible that we may now be in a position to explain the notoriously high mortality of pneumonia in mountainous regions (often as much as 60 or 75%). The already existing acidosis due to altitude would make the further development of acidosis on the basis of pneumonia particularly fatal.*

Certain other infections besides pneumonia give rise to some acidosis, especially in children. Typhoid seems to give very little in proportion to the depth of the toxemia.

ACIDOSIS AS A CAUSE OF DEATH.

Study of a number of cases in the University Hospital, as yet unreported, has suggested that acidosis is very frequently the immediate cause of death. In every case studied, with the exception of one patient who died within a few minutes from a large hemoptysis, there was a more or less marked terminal acidosis. Some of these were due to the pneumonia which so frequently terminates all kinds of chronic disorders. Aside from the infectious element, the poor circulation in a moribund person would result in insufficient oxygenation and the development of acid products, and the generally demoralized state of the urinary mechanism would favor retention.

An increase in the H-ion concentration of the blood causes at first a stimulation of the respiratory centre, but beyond a certain point there is depression and final paralysis. This sequence is seen in most dying people,—first a more or less marked hyperpnea or air-hunger (stage of stimulation), which eventually changes rather abruptly to the gasping and irregular “snapping” after air, which means that the depressing effect is being felt, and, as the CO₂ can now accumulate rapidly, this stage practically always terminates within a few minutes to an hour in respiratory paralysis and death. The limit of safety for a patient with a marked acidosis is very narrow—a very slight increase in the CO₂ content of his blood will carry him over the line to respiratory depression. This, per-

haps, explains the value of fresh air in the treatment of pneumonia,—not that the outside air is materially purer than that in the room, but the breeze across his face blows away his own expiration, and prevents the slight amount of re-breathing which takes place in a quiet room.²⁷ According to this theory, an electric fan blowing across a patient's face ought to accomplish the same purpose.

TREATMENT.

The treatment of acidosis is still very much a matter for discussion, but certain general principles are evident. No treatment is called for in the acidosis of high altitudes, anemia and probably pregnancy, since this is a beneficial reflex, intended to increase the aeration of the blood. Alkali therapy is apparently indicated in cases of overproduction of acid where the elimination is free, *i.e.*, chiefly in cases of diabetes and of cyclic vomiting. It must be remembered, however, that the acid has to be not only neutralized but excreted as well, and many a diabetic has died in coma after such efficient alkali therapy that his urine was alkaline. A free flow of urine must be maintained at all hazards. The best diuretic is water itself, and in a case of severe diabetes, care should be taken that the volume of urine be not allowed to drop with the fall in sugar. Probably a good many deaths in diabetes are due to the sudden removal from the system of the very efficient diuretic, glucose, and the failure to continue the elimination of acid by the ingestion of an amount of water at least equal to that formerly taken. Woodyatt²⁸ believes that the value of glucose in coma depends only on its diuretic action. This substance ought to have a wide usefulness in combating acidosis of all kinds, and its use, especially as a rectal drip with or without bicarbonate, has rightly been extended to the treatment of many conditions, especially after operations and in states of collapse.

When the kidneys are refusing to pass out the acid, it is doubtful if they will handle salts any better, and it would probably be safer for the present not to use alkalis in the acidosis of nephritis, pneumonia, and in terminal conditions. An alkali largely excreted in the feces might be tried, such as chalk, or bismuth subcarbonate.

In some conditions, especially nephritis, a considerable amount of acid may be eliminated by the bowel. This probably explains the relief to the dyspnea of nephritis which often follows free purgation.

On account of its acid-producing quality, meat should be avoided in the diet of a patient with acidosis.

The value of fresh air blowing across the face will probably be as great in other conditions as in pneumonia. Oxygen may be of value in some cases, though the lack of oxygen is in the tissue and usually not in the lungs. At high altitudes it ought to be useful.

Finally, it should be said that morphine ought

* It may also be remarked that the danger of high elevation to certain heart and kidney cases perhaps also depends on acidosis. As we learn more as to exact kinds of cases which are subject to such attack it will be possible to tell patients more intelligently whether they can or cannot safely go to mountainous regions.

to be used with the greatest care in all cases of acidosis. In spite of the great relief which follows its use for the paroxysms of nephritis, theoretical considerations, as well as certain observations on patients, would seem to indicate that the drug may be highly dangerous.† The hyperpnea represents the effort of nature to keep the acid concentration of the blood below dangerous limits, and if the respiratory mechanism is depressed by morphine, the compensation may fail, and a fatal acidosis develop.

NOTE.—Between the writing and the publication of this paper a number of articles have appeared on the subject of acidosis. Of these, probably the most important is one by Marriott and Holland,²⁹ who have demonstrated in nephritis a very marked increase in the phosphates of the blood, seeming to indicate, as was suspected, that in many of these cases of the retention type the acidosis is largely due to the failure of the kidney to eliminate the acid phosphate.

† Cheyne-Stokes breathing regularly develops in many patients after even a small dose of morphine. We must regard the recurrent periods of apnoea in this condition as being harmful.

REFERENCES.

- ¹ Henderson, L. J.: The Theory of Neutrality Regulation in the Animal Organism, *Am. Jour. Physiol.*, xxi, 427, 1908; *Ibid.*: *Ergeb. der Physiol.*, viii, 254, 1909; Palmer and Henderson: Studies on Acid Base Equilibrium and the Nature of Acidosis, *Arch. Int. Med.*, xli, 153, 1913.
- ² Robertson, T. B.: *Jour. Biol. Chem.*, vi, 313, 1909.
- ³ Penhoby: Studies on Acidosis and Dyspnea in Renal and Cardiac Conditions, *Arch. Int. Med.*, xiv, 236, 1914.
- ⁴ Marriott, W. McK.: A Method for the Determination of the Alkali Reserve of the Blood Plasma, *Arch. Int. Med.*, xvii, 840, 1916.
- ⁵ Ryffel: *Jour. Phys.*, xxxix, 29, 1909; Barcroft, J. B.: The Respiratory Function of the Blood, Cambridge, 1914, p. 239.
- ⁶ Barcroft: *Loc. cit.*, p. 260.
- ⁷ *Ibid.*: p. 262; *Jour. Phys.*, xlii, 68, 1911.
- ⁸ Douglas, C. G.: Die Regulation der Atmung beim Menschen, *Ergeb. der Physiol.*, xiv, 372, 1914.
- ⁹ Douglas, Haldane, Henderson and Schneider: *Phil. Trans. Roy. Soc. B*, cclii, 185, 1913.
- ¹⁰ Fischer, Martin: Oedema and Nephritis: New York, 1915.
- ¹¹ Henderson, L. J.: A Critical Study of the Process of Acid Excretion, *Jour. Biol. Chem.*, ix, 403, 1911; Henderson and Palmer: The Intensity of Urinary Acidity in Normal and Pathological Conditions, *Ibid.*, xiii, 393, 1913; Henderson and Palmer: On the Several Factors of Acid Excretion, *Ibid.*, xvii, 305, 1914; Palmer and Henderson: A Study of the Several Factors of Acid Excretion in Nephritis, *Arch. Int. Med.*, xvi, 109, 1915.
- ¹² Sellards: *Bull. Johns Hopkins Hosp.*, xxiii, 289, 1912.
- ¹³ Beddard, Pembrey and Spriggs: *Brit. Med. Jour.*, 389, 1915, No. 2854.
- ¹⁴ Haldane and Priestley: *Jour. Physiol.*, xxvii, 225, 1905.
- ¹⁵ Sörensen: *Ergeb. der Physiol.*, xii, 393, 1912.
- ¹⁶ Hasselbalch: *Biochem. Zeitsch.*, xxx, 317, 1910; Hasselbalch and Lundsgaard: *Ibid.*, xxxviii, 77, 1912; Hasselbalch: *Ibid.*, xli, 408, 1912; *Ibid.*, xlix, 451, 1913.
- ¹⁷ Levy, Rowntree and Marriott: *Arch. Int. Med.*: xvi, 389, 1915; Rowntree: *Ibid.*, xvii, 525, 1916.
- ¹⁸ Barcroft, J. B.: *Loc. cit.*, pp. 53, 218.
- ¹⁹ *Ibid.*, p. 236.
- ²⁰ *Ibid.*, p. 243.
- ²¹ Lewis, Ryffel, Wolf, Cotton and Barcroft: *Heart*, v, 45, 1913; Poulton and Ryffel: *Jour. Physiol.*, xvi, p. xlviii.
- ²² Van Slyke, D. D.: *Proc. Soc. Biol. and Exp. Med.*, Apr. 21, 1915, xii, No. 7.
- ²³ Henderson, Y.: Carbon Monoxid Poisoning, *Jour. A. M. A.*, lxvii, 580, 1916.
- ²⁴ Hasselbalch and Cammeltot: *Biochem. Zeitsch.*, lxviii, 206, 1914; A study by L. A. Emge of the University of California Hospital, in which he found an almost constant acidosis in pregnancy by Van Slyke's method, appeared in *Am. Jour. Obst.*, xvi, 769, 1916.
- ²⁵ Howland and Marriott: *Bull. Johns Hopkins Hosp.*: xxvii, 63, 1916; Howland: *Am. Jour. Dis. Children*, xi, 309, 1916.
- ²⁶ Lewis and Barcroft: *Quart. Jour. Med.*, viii, 108, 1915.
- ²⁷ For an excellent discussion of re-breathing of expired air under various conditions, see Crowder, T. R.: *Arch. Int. Med.*, xii, 420, 1913.
- ²⁸ Woodvatt, Sansum and Wilder: *Jour. A. M. A.*, lxv, 2070, 1915.
- ²⁹ Marriott and Holland: Phosphate Retention as a Factor in the Production of Acidosis in Nephritis, *Arch. of Int. Med.*, xlii, 708, 1916.

CHRONIC CARBON MONOXIDE INHALATION AND SOME OF ITS UNTOWARD RESULTS.

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IN all probability there is no other known chemical substance, with which a high percentage of our urban and suburban population is brought into such frequent contact, that has attracted so little attention and yet is so capable of inducing such insidious and widespread destruction of health as carbon monoxide gas.

Several years ago, while engaged in the study of family syphilis, the writer was strongly impressed with the number of obscure nervous disorders that were found to have been associated with the inhalation of either coal or illuminating gas. On investigation it was found that these gases are capable not only of producing many diseases and conditions peculiar to themselves, but also of simulating nearly every disease known to modern neuro-pathology as well as many of the so-called "idiopathic" and "functional" abnormalities.

While it is true that relatively few physicians have recognized carbon monoxide to be an important etiological factor in the development of some of the most profound nervous disorders, it is also true that a most splendid outline of the possibilities of this subtle poison is furnished by an eminent American physician. This most illuminating discussion may be found in Osler's "Modern Medicine" of 1907, and was written by Dr. David L. Edsall, now Chief of Service at the Massachusetts General Hospital. While it is true that Dr. Edsall's article is replete with facts well worthy the attention of every living physician, it is also apparently true that the subject has not been given the respect and universal consideration that it surely deserves.

On careful inquiry, the writer found but one physician (out of more than sixty interviewed) who possessed more than a fragmentary knowledge of chronic carbon monoxide poisoning and no school or public clinic where the dangers of chronic gas poisoning are taught or considered at all, and it is owing to these deplorable facts that the above comment is respectfully offered.

Referring again to the article in "Modern Medicine," the writer wishes to say that while the number of symptoms, diseases and conditions therein mentioned as results of chronic carbon monoxide poisoning are sufficient in number not only to index a small library upon the subject but also to introduce one into the realms of nearly every branch of medical science, the full story of this odorless and invisible gas remains untold; and it seems highly probable that many years will elapse before the promulgation of adequate knowledge regarding its sources and dangers will be universally disseminated.

Realizing that it would be impossible, in an article of this kind, to discuss in detail the multitude of conditions known to be produced by the prolonged inhalation of carbon monoxide, the writer will be content merely to mention a group of symptoms, diseases, and conditions with which he has had to do and, for the sake of brevity, will limit the list to those of which he has had ample opportunity of personal observation and study.

For lack of a better method the symptoms and conditions about to be mentioned will be arranged in alphabetical order and appear under two headings, namely: first, those conditions known to have been caused by carbon monoxide intoxication; and second, those which have occasionally been found associated with the inhalation of this toxic substance but remain of unproven origin.

LIST 1.

Conditions known to have been caused by carbon monoxide intoxication:

Abolition of the deep reflexes.
Akinaesthesia.*
Anaemia.
Angina pectoris.
Ankle clonus.*
Arteriosclerosis.
Asthma.
Ataxic gait.†
Babinski's sign.†
Bronchitis, acute.
Bronchitis, chronic.
Burning and itching of the toes and fingers.†
Cardiac angina.†
Cardiac neuroses.
Cataplexy, simulating that of dementia precox, with apparent recovery.
Central and marginal scotomata of optic disks.*
Chills and fever.
Color blindness, transitory.*
Combined cerebrospinal and peripheral nerve lesions and irritations.
Constipation, chronic.
Contractures of skeletal muscles.
Convulsions, clonic.*
Cyanosis.
Delusions, both transitory and permanent.
Diabetes mellitus.
Diplopia.
Disseminated sclerosis, distinct types of (two cases reported).
Dyspnoea.
Engorgement of retinal vessels.*
Epileptoid seizures.
Exaggeration of knee jerks and other deep reflexes.
Excessive appetite (a very frequent but not a constant symptom).
Fibrillary twitching of muscles.
General weakness.
Girdle pain.*
Glycosuria, sudden and prolonged, transitory.
Hallucinations of sight (nocturnal).
Headache (frontal, coronal, and occipital).
Hemic murmurs (cardiac).
Herpes labialis.
High blood pressure (225 to 300 with return to 140).
Hippus.

Hyperaesthesias.†
Hypersensitiveness to pain.†
Hypochondriasis (so called).
Hysteria.
Hysterical joints (so called).
Hysterical paralysis (so called).
Illusions (varied, nocturnal).
Impairment of pupillary light reflexes.*
Impairment of the thermological sense.*
Impairment of vision (toxic amblyopia).
Insanity.
Insomnia.
Intercostal neuralgia.
Intention tremor.*
Irregular pupils.*
Itching of skin.
Lancinating pains.†
Languor (usually more pronounced in early morning).
Lightning pains.†
Localized anaesthesia.*†
Localized weakness.
Loss of knee jerks and other tendon reflexes.†
Migraine (simulating that of brain syphilis).
Mono- and multi-muscular spasms.
Multiple neuritis, distinct types of.
Multiple sclerosis, distinct types of (two cases reported).
Muscular contractures.
Narrowing of the fields of vision.*
Nausea and vomiting.
Nightmare (shouting in sleep with illusions and optical hallucinations).
Numbness and tingling of extremities.
Nystagmus.*
Oedema of optic disks.*
Optic disk, sectional blanching of.*
Optic nerve atrophy (secondary).*
Pain, excruciating, including every other known character of.†
Pain in head accompanied by tenderness of scalp.
Pain unrelieved by morphia or other heroic treatment.†
Paresthesia (itching, tingling, formication, etc.).
Patella clonus.*
Peripheral neuritis (localized).
Polyuria.
Pseudo angina pectoris.
Pseudo tabes.†
Repeated rigors without elevation of the temperature.
Scanning speech.*
Shrinking and atrophy of muscles.*†
Skin lesions (chronic).
Spastic gait.*
Sphincter control, impairment and transitory loss of.*
Spinal irritations.
Stereognostic sense, loss of.
Sudden changes in temperament, irritability, etc.
Syncope.
Synovitis, chronic.
Tachycardia.
Tactile sensation, disturbances of.
Tenderness of nerves and muscles.†
Tinnitus aurium.
Typhoid state, distinct.
Thyroid enlargement.
Unequal pupils.
Vertigo.
*Seen in cases of multiple sclerosis caused by chronic carbon monoxide inhalation in furnace gas.
†Seen in cases of multiple neuritis caused by chronic carbon monoxide inhalation in illuminating gas.

LIST 2.

Conditions which have been found associated with the inhalation of carbon monoxide but remain of unproven origin.

Aphasia, transitory.

Cancer.
Cerebral Haemorrhage.
Chlorosis.

Haemoptysis (autopsy six years later revealed a moderate arteriosclerosis and carbon deposits in lungs, but no tubercular lesion).

Mènière's disease (one case only)

Nephritis, chronic.

While the sources of intoxication in the above-named conditions are almost as varied as the number of cases involved, it may be worth while to mention those with which the writer has had to do, some of which may be of interest to others in making a study of industrial and hygienic conditions.

The known sources from which men, women, and children have suffered the pangs of chronic carbon monoxide poison, in the experience of the writer are: Leaky or imperfectly fitted gas appliances such as flexible gas tubes, permanent metal gas fixtures, gas stoves and gas ovens (improperly regulated), hot water heaters, gas heaters, extinguished pilot jets, and leaky gas meters; also house furnaces (hot-air type) with uncemented fire-pot, house furnaces (hot-water type) faultily installed or with inadequate and improper draughts; coal stoves and ranges with leaky pipes or insufficient draughts, gasoline and kerosene automobile engines, steam-heating furnaces, in schools and other public buildings, with various types of forced draught appliances; also from railroads and factories burning soft coal, bakery ovens and leakage from gas plants and main pipings.

Obviously, the amount of gas that might escape and be inhaled from some of the above-named sources must be exceedingly small; indeed so moderate in amount that there is a tendency on the part of many casual observers to discredit the possibility of such profound toxic and paralytic symptoms being produced by such minute quantities of carbon monoxide; and it is here that the gravest danger, to the individual and to the general public, exists.

While it appears that several physicians who have had to do with *acute* carbon monoxide poisoning have expressed the opinion that "if the patient survives for one week after the exposure, complete recovery usually takes place," and while the writer has ample cause to regard this opinion as an extremely erroneous one, it is a fact that repeated inhalation of very minute quantities of carbon monoxide are far more dangerous to the future health of the individual than one exposure where the patient is rendered fully unconscious.

Several hypotheses have been advanced regarding the rôle played by carbon monoxide in combination with blood elements; and while a number of articles have recently appeared that would tend to place discredit upon some of the older observations that have long been accepted as conclusive, it is highly probable that carbon monoxide does unite in a more or less fixed combination with the haemoglobin of the red blood cells.

The opinion has recently been advanced in a journal of good standing that carbon monoxide is not an actual poison, but acts *solely by asphyxiation* in producing anaemia of the brain and nerve centers with the result that functional disturbances and structural lesions sometimes follow; and an attempt was made by its author to substantiate his theory with test-tube "proof." It would seem that adherence to the sphere of common sense, together with our knowledge of other asphyxiating agents, to say nothing of the facts already proven by many independent observers, should render this theory, bolstered up by observations on blood under conditions not at all similar to those of its natural existence, unworthy of serious consideration.

After prolonged clinical observations on the behavior of many cases of chronic carbon monoxide intoxication (a report on thirty-one cases will follow), the results of which are fully consistent with our knowledge of carbon monoxide haemoglobin as observed with the spectroscope, the writer wishes to express the opinion that CO is a chemical substance capable of a peculiar selective affinity; that it enters into a more or less fixed combination with the haemoglobin of undiluted blood and yet possesses a stronger avidity for certain nerve elements that are not found in other structures of the body; also that when carbon monoxide pervades the general circulation it is *slowly liberated* from its haemoglobin combination and reabsorbed by receptive brain and nerve tissues so that irritative and permanent degenerative changes often result; and that when such irritations and degenerations of the central or peripheral nervous systems are once established, an infinitely small quantity of this gas (one part to two hundred thousand) is capable of aggravating and hastening the retrogressive changes which it has already produced.

In support of the above opinion there is ample and undeniable proof that carbon monoxide, when inhaled in quantities entirely too small to interfere materially with the amount of oxygen carried by the blood, does often produce profound degenerative changes in the central and peripheral nervous systems as above mentioned; also that new signs and symptoms of these changes often continue to appear for weeks after the removal of the patient from all sources of intoxication, and that evidence of its complete elimination from the body is finally recognized in marked improvement of the general health

and in the disappearance of hemic and functional murmurs under proper hygienic environment.

At present (October, 1916) the diagnosis of chronic carbon monoxide poisoning depends upon a definite history or actual knowledge of repeated or prolonged exposures, together with the finding of a group of nerve symptoms compatible with the lesions that it is known to produce, and finally upon excluding the possibility of the said conditions being due to disease or other toxic agent. In chronic poisoning the spectroscopist does not show the presence of CO in the blood unless the patient is asphyxiated from an added acute exposure.

The differential diagnosis of chronic carbon monoxide poisoning is chiefly against lead, alcohol, tobacco, arsenic, carbon bisulphide and syphilis. The first four can be excluded by the history, clinical picture, and progress of the case, together with chemical analysis of the blood and urine. The fifth may be excluded by the history and occupation of the patient, while the sixth, syphilis, where a history of an exposure to either is unobtainable, is the most difficult of all to exclude. In such cases the clinician should remember that in carbon monoxide poisoning the subjective symptoms usually outnumber the physical signs, and while the signs of structural changes are often similar to those produced by syphilis they are never quite typical of that disease; also that the signs and symptoms produced by carbon monoxide do not respond to potassium iodide or to any other known medication. In syphilis we have the blood, spinal fluid, and luetin tests, also the time-honored therapeutic test, all of which are of great value in reaching a definite conclusion.

A most perplexing problem is occasionally met with in cases where one condition overlaps the other, the greatest difficulty being to determine which is the chief offender. The question very properly arises as to whether some persons are much more susceptible to carbon monoxide than others. It is safe to state positively that this question can be answered in the affirmative. There are a number of instances in the experience of the writer where a group of four or five persons were exposed under seemingly like conditions with the result that but one out of the party suffered severe, permanent results, while the others escaped with but slight untoward symptoms.

Probably the only efficient treatment of chronic carbon monoxide poisoning will be found in the future development of preventive medicine, while the principal armamentarium will be: 1st—Education of the public to a realization of its dangers. 2d—Rigid inspection of public buildings by men highly proficient in the study of hygiene and toxicology. 3d—More rigid smoke and fuel laws with enforcement of the same. 4th—The abolition of all flexible gas fixtures, forced draught appliances, faulty chim-

ney draughts, basement openings into cold-air shafts connected with hot-air furnaces, and finally, a legal responsibility on the part of contractors for the proper installation of house furnaces and gas fixtures; also the compulsion of property owners to keep all permanent fixtures in occupied tenement houses in a reasonably safe condition.

No doubt the question of greatest importance to those already afflicted is the prognosis, about which there is much uncertainty, but the writer feels that if a diagnosis can be made from the history and subjective symptoms before definite physical signs appear, immediate removal of the patient from all sources of intoxication to a place of better hygienic conditions will finally* result in recovery, but in cases where definite signs or objective symptoms have made their appearance, it is very doubtful if anything like complete recovery ever takes place.

THE EPIDEMIOLOGY OF ANTERIOR POLIOMYELITIS EPIDEMICA, 1916.

By D. M. LEWIS, M.D., NEW HAVEN, CONN.,

Epidemiologist, Board of Health.

THE following facts are warranted as proving the epidemiology of this disease, being based not alone on the study of 85 reported cases in this city, but upon the neighborhood and house infections for the past two years. During that period I have seen not only all individuals in all houses where any communicable disease or suspected case has existed, but through my system of obtaining examination of a large part of school absentees, I have come in contact with practically all neighborhood illnesses.

In March, 1915,¹ I stated as follows: "At this time true influenza is appearing, manifested in the children that we have seen, mostly as a unilateral tonsillitis, spreading through the members of the family. Less in number are those with central nervous system signs and symptoms. It is of importance to control these to prevent later epidemic incidence, of importance to differentiate them from diphtheria and scarlet fever." In February, 1916,² I showed that not true influenza, but a streptococcal "grip" had been and was epidemic, there being numerous cases of such reported as scarlet fever and diphtheria.³

Since then I have shown⁴ that anterior poliomyelitis was present in this vicinity in two types. The one characterized as a general infection was similar to that prevailing in New York City and in near by towns in this vicinity where I was called in consultation. The following are facts:—

*Usually from three to twenty months are required.

1. Typical abortive cases of poliomyelitis were the streptococcal grip type of the spring, were present in frequently the same family as then affected, but in individuals who were not affected at that time. Other individuals of the family gave the more recent history of malaria, sore throats or bronchitis, and showed an eye strabismus or a recent throat or muscle weakness. In some instances, carriers in the family were demonstrable, mostly the nasal type as described in my article on Streptococcal Infection Simulating Diphtheria.

2. Typical cases of the disease as to onset, symptoms and signs were classical pictures of "Influenza." Atypical and suspected cases were like the spring grips save the more frequent irritative pressure signs of fluid on the brain, pons or cord, especially during a short period during and following the extreme humidity.

3. The convalescence of all abortive, mild or suspected cases has been very typically "Influenza or Grippe."

4. Although I have obtained but one spinal fluid in an abortive case showing a fine diplo-streptococcus, the blood picture of leucocytosis and high polymorphonuclear differential count is in accord with such an etiology.

5. The quick reparative response not only in non-crippling apparent paralyses, but those apparently crippled as well, is not in accordance with similar lesions in the sporadic cases of this year or previous years.

6. Of several thousand children coming from New York City and vicinity during the two months following July 10, 1916, in but one family did I find a carrier. That one was in a family who brought a case of poliomyelitis with them. The greater proportion of local cases had family, house or neighborhood immediately or more remotely previous infection to explain the infection of the reported case. This was true in several remote country places where, voluntarily quarantined for four and five weeks, the source of the infection had been unknown.

7. Since the middle of September there has been but one case of poliomyelitis reported, that of an adult infected in a neighboring city. Yet, since that time there have been three typhoids, four scarlet fevers and six diphtherias—all in children of ten and under, where the onset, signs, symptoms and course were in no wise different from the poliomyelitis of the summer, with the exception that there were no paralytic manifestations. One of these so-called typhoids was especially characteristic in the fear of being handled. The family history, the family or house carriers, when found, were streptococcal grips. Among some 300 absentees from school during the past one and one half months, I have seen 42 cases of grip, 3 of whom in one neighborhood showing an infective jaundice as well.

CONCLUSION.

The epidemiology of "Anterior Poliomyelitis Epidemica, 1916," shows this disease to have been an integral part of a streptococcal grip, prevalent in 1915, epidemic in 1916. This grip has been most protean in its manifestations.

REFERENCES.

- ¹ Monthly Bulletin, Department of Health, New Haven, Conn., March, 1915.
- ² *Ibid.*, February, 1916.
- ³ Streptococcal Infection Simulating Diphtheria, BOSTON MEDICAL AND SURGICAL JOURNAL, June 8, 1916.
- ⁴ Monthly Bulletin, Department of Health, New Haven, Conn., August, September, October, 1916.

Industrial Health Insurance.

MEDICAL SERVICES AND MEDICAL AND HOSPITAL FEES UNDER WORKMEN'S COMPENSATION.

BY FRANCIS D. DONOGHUE, M.D., BOSTON,

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THERE is a principle in socio-economics known as the economy of human energy. In its broadest sense this term applies to the science of co-ordinating all the forces of production and distribution in such manner that all forms of waste will be reduced to the very lowest terms possible, and the potential forces, human and material, will be developed with the greatest efficiency. The result to be accomplished is the raising of the sum total of human happiness morally, physically, and economically to as high a degree as possible and in such manner as to make the distribution conform to the best rules of altruistic justice. The principles in this theory touch upon all forms of human activity, but will be generally applied to the entire social organism only through a long process of education, or to a considerable degree, perhaps, through the effect of some great awakening, such as the problems which have been brought to light by the present terrible but educative European war. Already signs are apparent that there has been a quickening of the public conscience to the many chances for improvement in our economic structure, and this in itself is an extremely important step in the right direction.

The subject of industrial injuries is small compared with the entire solution of all national and international problems, but is, however, of vast consequence as one of the interdependent problems of the principle of economizing human energy. Industrial injuries, properly viewed, form part of the cost of production and distribution and are a burden upon the employee, the employer, and all persons combined. A compensation act narrowly viewed has to do with the payment of money to these employees and to the

payment for certain medical expenses which must be taken care of in some manner. This in itself is a big improvement over the old system, but why stop there when there is presented the opportunity for accomplishing results permanent in value?

In dealing with the workmen's compensation act or acts we are dealing with compensation for the injured employee, in which an attempt has been made to eliminate the source of waste which came from lawyers and litigation; and the question arises whether this should not apply equally to the medical profession. Considering the subject from the standpoint that compensation means adequate medical treatment and rehabilitation, with money payments as a stop-gap while the treatment and rehabilitation are going on, the medical aspects of compensation have not yet been fully developed either to their greatest extent or to their maximum efficiency.

While our experiences with this form of conservation have been limited in time, through the intensive study which has come from the opportunity to consider large numbers of cases more or less under one central supervision, certain essential facts have clearly demonstrated themselves. If the amount of money that industry is called upon to pay were to be handled and distributed in the old way, where the employer insured himself against lawsuit and where the injured employee settled his case on the most favorable terms that he could make with very little reference to the accident or duration of his disability, industry might well look askance at further development in the compensation field.

The curtailment of emigration, due to the war in Europe, and the increased demand for workmen, brought about by our unexampled industrial activity, have led to a readjustment of industrial vision, so that the value of the man to the community and to the industry appears in a different light than heretofore.

What I have to say is not based upon any philanthropic or socialistic theory, but is a matter of applied common sense to the medical problem. In view of Mr. Williams' paper, I will start by saying that any compensation scheme which does not make medical provision for the preservation and care of the workmen from the medical standpoint is a joke.

Adequate medical service must be a leading feature of workmen's compensation, if not the most important feature of compensation for the living workman. In return for the waiting period, generally provided in compensation laws where no monetary consideration is paid, provision is made for medical and hospital services and medicines when required.

That the injured workman has accepted any waiting period would seem to imply that he is willing to forego some of his rights if the seriousness of his accident can be minimized and his period of disability shortened.

Since most cases in Massachusetts, as in other States, do not last long enough to be paid com-

pensation in the form of money, we should scrutinize carefully any substitute for the best medical services that it is possible to offer. Further than this, with the administration of various laws, a better correlated system of treatment than the ones in vogue hitherto may be developed.

A completely efficient hospital for the proper care, treatment, re-education, and readjustment by personal study of an injured employee has yet to be constructed and maintained. The charitable idea underlying the establishment of hospitals still prevails, and the appeal to the heart is much stronger in the case of the crippled child than it is in the case of the crippled adult, even though he has depending upon him a number of children who may become crippled by reason of lack of nutrition or the invasion of disease if the breadwinner of the family is partly or totally disabled from work for a considerable period.

An appointment on the medical or surgical staff in a general hospital is a big asset to the man appointed. The medical profession itself is not at all deceived by what is given and what is received by men on hospital staffs, and the reason hospital progress has been so slow is because hospitals as a rule are run by laymen who have neither the knowledge, experience, nor the desire to exact that "strict accountability" from the staff members treating the ordinary run of cases that they would exact if the patient treated was one of their own family. Many a hospital trustee, eminent in altruistic effort and burning with zeal for uplift, is too proud to fight for an injured workman.

There is a general feeling in the medical profession that general hospitals should not care for a person able to pay for private service, and they feel that an insured person comes within that category. The public, up to a comparatively recent time, were afraid of hospitals, and were encouraged to remain away from them until compelled by necessity to go. The development of the modern hospital, with the elaborate and complicated methods of diagnosis and treatment, have become competitors for public favor. They are still in a state of evolution. The advanced type of hospital has operating physicians and surgeons who are paid for full-time work which they perform in connection with the medical teaching at some institution. There is the type of hospital in which the experience and prestige serves in lieu of other direct rewards and in which no man unless of the staff is permitted to treat patients. There is another type presented where there is a regular staff, but to which outside doctors not on the staff are permitted to send patients and perform their own operations. Then there is the private hospital under private contract.

I am inclined to believe, with Dr. E. A. Codman, Boston, whose studies of hospital efficiency are second to none, "that the time has come when hospitals should advertise the ability of

their staffs by printing truthful reports which they have obtained of cases, and this should also be true of medical as well as surgical work," and not by the presentation of only favorable results. Compare the reported results of bone-planting with what we see as results.

Constant supervision and treatment may partake too strongly of paternalism, but it is the paramount duty of the industrial accident boards to insist upon methods of persistent precision. It is important to remember that the weakened points in our whole scheme of medical care have as much importance upon final results as the most elaborate details of special treatment bring for a short time even under the most favorable conditions.

If it were possible every injured workman should be kept under medical supervision from the time he was injured until able to resume his work. Such supervision should not, and need not be of the type as to be unduly expensive, and if properly carried out would save much time to the worker as well as to the employer of labor. It would have the additional advantage that the injured man would be in contact with encouragement and sympathetic treatment; when left to his own devices he might not make his best effort or he might not make his best effort at the opportune time. Early return to work is greatly helped by the assurance given by the doctor that it is safe. That does not mean within two weeks or thirty days, but it means at the time he is able to make an effort.

The loosening up and increasing flexibility of injured members could be aided by proper treatment. Even after return to work a man should be provided the opportunity to drop in and see a doctor if the work seems too hard or increases his pain. The man will stick it out better if the doctor in whom he has confidence advises him of the significance of pain, or perhaps the doctor might indicate means of relieving his discomfort while the man still remains at work. Intelligent handling of injuries requires a great deal of skill and experience not only in regard to the specific trouble under observation but the treatment of the man as a physical whole and the man as a unit in the scheme of employment.

Care and judgment are not so much needed in regard to the first treatment, which can be and is more or less standardized, as in the later handling of the case. It is evident, for instance, that with a fracture of the lower leg, for a certain period of time hospital care is required. Hospital care is good, but the minute the man is able to get from his bed to crutches, more careful supervision is required than when he is under the direct care which comes from hospital discipline. The orthopedist must complement the surgeon.

Treatment should not be attempted in a routine manner, because the necessary treatment is impossible to estimate accurately by ordinary clinical examination. For instance, an acutely

irritated back should not be irritated further by additional massage and exercise, but rest is needed first, followed later, after acute symptoms have begun to abate, by other forms of treatment, to reinforce weakened muscles or to change weight-bearing balance. Backs can be baked too long and frequently so as to become harmfully hypersensitive to heat. They may be massaged too often and vigorously, or they may be protected too continuously and to such a degree that weakness from disuse increases.

In many cases it is necessary for patients to receive both local and general treatment. While substantially all require some local form of treatment or protection to the injured part, cure is often retarded by the lack of proper hygienic regulations or surroundings. While every form of joint or back injury requires some local form of protection, massage, or baking, they all are entitled to have their recovery hastened by simple hygiene regulations which are known to be beneficial.

Unless some amount of compensation is paid before the twenty-first or even the seventeenth day, as it will be in Massachusetts after January 1, 1917, I am convinced that clinics for industrial accidents would procure better results if in addition to the medical and surgical treatment offered to the man he should be fed at the same time and place that he received his treatment. If this were done we might feel sure that he would have at least one meal a day. At present I often have doubts that he has even that one. A 10-cent plate of soup applied to the lining membrane of the stomach will take a man further on the road to recovery than 50 cents' worth of a patented preparation applied to his knee.

Many cities of Massachusetts at the last election passed by referendum vote upon the proposition of vocational schools. One such school to be established in Lynn, one of the largest shoe-making cities in the world, will train both boys and girls to enter the shoe industry after giving a four-year course for the boys and a two-year course for the girls.

If this development of vocational schools becomes widespread, as it should, or if the present school courses are supplemented by vocational schools at night, these vocational schools might be used for the reëducation of men injured in the particular industry. Trained instructors serving outside their ordinary working hours, for the training and reëducation of injured employees, in conjunction with continuing medical treatment, will bring results.

In States which have a large urban population, with the natural congestion that must necessarily arise in cities, the development of industrial farms would afford adequate outdoor exercise for injured employees during rehabilitation. It would provide a certain amount of regular régime, with regular food and sleep, and it would take the injured or crippled employee

away from that destroyer of morals and stamina—the city saloon. The person who called the saloon the poor man's club neglected to state which end of the club was passed to the workman.

The commission appointed in Massachusetts to investigate the subject of workmen's compensation and report a bill, was headed by Hon. James A. Lowell. Mr. Joseph A. Parks was a member of the sub-committee of two of the commission which drafted the present law. The latter's services were utilized by the Commonwealth by his appointment to membership on the Accident Board.

They indicated the lines along which the new law when enacted must develop, as follows:

The controversies under the act will relate largely to the extent and duration of the injury. The successful administration of the act requires the assistance of skillful physicians and surgeons of the highest integrity. This phase of the situation has occasioned difficulty in other countries. The details of this subject must be determined by the industrial accident board as they arise in actual practice. The emphasis will be laid *not* as heretofore *on the lawyer, but on the doctor.* (Italics are mine.)

The medical profession of this country had very little to say about the passage of workmen's compensation laws, and the rights of the medical profession were neither carefully considered nor conserved in most of this legislation.

It is to the credit of the medical profession that they were not early upon the legislative scene asking for their pound of flesh before carrying out the broad humanitarian principles underlying workmen's compensation.

Hospital fees.—We have met the situation of hospital fees in Massachusetts by the establishment of a few simple fundamentals brought about by a committee representing two great medical societies in the State, working in conjunction with three medical men appointed by the industrial accident board. The basis for medical fees is as follows:

"That fees paid by the companies should not be less than the average minimum fee in the locality in which the service is rendered."

This refers to fees paid to doctors, not to contracts between doctors and the insurance companies. This took into account that many medical and surgical fee tables established by local medical societies had perhaps been based upon the average income of the so-called better classes and were not generally applicable to workingmen,—who form such a large part of the free hospital and dispensary service or who turn to fraternal organizations or hospital associations.

"That charges up to \$50 for major operations are not excessive."

This did not fix a maximum, but made possible other payments based upon circumstances.

"That service rendered by lodge physicians be paid for, provided it is not inconsistent with the rules of the order."

The status of the lodge physician is a very difficult one upon which to pass, but as the choice of lodge physicians to which a member is obliged to go is somewhat similar to the insurance company providing a man to whom the employee might be obliged to go, the committee left the matter open.

"That specialists, established and recognized by the profession as such, may receive special rates for their work, provided the case requires special skill."

In a discussion of what is reasonable hospital care, it is extremely difficult to lay down a hard and fast rule which will operate in all territories with the utmost effectiveness. In the administration of the law in Massachusetts, an effort has been made to utilize existing medical institutions as they stand without insisting upon costly duplication at the expense of the insuring companies.

The hospitals are allowed to charge the insuring companies for the care of an injured patient the same rate that they would charge to an employee of a man not insured. Perhaps that works a hardship in many instances. Perhaps better service might be obtained by paying more money, but ultimately the payments to hospitals must be based upon what they give in return.

In a general way, the payment for hospital services is based upon the rule that for the first two weeks' services \$15 per week will be allowed, provided that \$15 is not a higher rate than is charged to the uninsured employee of the public at large, and for subsequent weeks in unusual cases it is felt that some concession should be made by the hospitals, and many of them make concessions from this rate, even if the rate does not fully cover the actual cost.

Reasonable extras are allowed—a fee for the taking of X-ray plates; ambulance fee; fee for plaster-of-Paris casts; fees for special nurses, not exceeding \$4 per day; and private rooms, not exceeding \$25, when the condition of the patient or the character of the injury needs isolation.

The question of adequate fees for services rendered under the varying conditions which obtain in a State like Massachusetts, and the question whether the man is better served by doctors of the employer's choice or of his own, is still an open one. The theory that if the employer represented by the insuring company were given the choice of physicians the most skillful man would be employed has not been fully borne out by experience. On the other hand, it is for the medical profession to demonstrate that the free and untrammelled choice of physicians has not elements of weakness which will impair the full usefulness of the compensation act.

Perhaps the BOSTON MEDICAL AND SURGICAL JOURNAL in an editorial in its issue of September 21, 1916, indicates the line along which we might proceed:

"It should be remembered in considering new legislation that unrestricted choice of physicians by employees will probably result in the establishment of a State-wide fee table. Such fee tables are in effect in other States and, of course, are much below the standard of fees now being paid under the 'average minimum' approval standard of the present workmen's compensation act. It may be also that absolute free choice will tend to eliminate competition between the present 27 insurance companies and bring about the concentration of all the compensation business under one insurance company, with whom all would be required to transact business under direct State supervision. There is a possibility that the problem may be solved by the combination of 'free choice' under a supervising consultant, agreeable to and appointed by the insurance companies."

Dr. Emmet Rixford, of San Francisco, at the latest meeting of the American Medical Association (*Journal American Medical Association*, Sept. 30, 1916), indicates another difficulty:

"The friendly societies or fraternal organizations or lodges which have increased so prolifically during the last 50 years are organized largely to afford medical and surgical services at such cost as to be within the reach of the laboring classes, the monthly dues providing the means for the employment of community physicians. Many such, however, extend their membership to include people in much more comfortable circumstances, who join for the purpose of securing cheap medical and surgical service.

"The medical profession, therefore, finds itself opposed to what it considers exploitation of the profession. While from the standpoint of cheapness this scheme works well enough for the members of the societies, it often—in fact, generally—fails to secure to the patient competent medical service. Investigation has shown that in these societies the payment to the doctor is far less than \$1 a visit on the average, and in some cases as low as 25 cents. The members paying monthly dues, and not so much per visit, run to this doctor on the most trivial excuse, thereby unduly multiplying the number of visits. Some of these lodge doctors see 40 patients a day, receiving therefor from \$100 to \$150 a month. It is no wonder, then, that the medical work done, is as a rule, of the most perfunctory sort.

"Under workmen's compensation and compulsory industrial accident insurance, practically the whole of traumatic surgery is taken from the lodges; and if insurance against illness of workmen becomes a fact in this country, as it has in England and Germany, the *raison d'être* of most of these associations will have disappeared. England and Germany, however, instead of destroying these societies, have utilized those of them which are financially sound, and have in fact commissioned them to take care of

accident and illness of members, but under strict governmental supervision."

If we have unlimited free choice, how can we get patients into hospitals from institutions?

Germany before the war started a propaganda, which is being carried out under war conditions, which is proving that workmen with one leg and with no legs, with one arm and no arms, with one eye and no vision at all, with shortened limbs due to serious injuries other than amputations, can be furnished with employment suitable to their condition in life. The saving to industry of skilled workmen, men who have followed industrial pursuits all of their lives, cannot be estimated.

Perhaps I have gone far afield from the subject assigned me, but as I feel that early, adequate and continuing medical care is necessary to preserve our trained men, I make no apology.

Cure is better than controversy.

Fee tables are simply makeshifts. The great principle underlying all of compensation is adequate treatment from start to finish, and the measure of medical services should not be the measure of the medical costs, but the measure of medical results.

I am not yet convinced that State medicine is to be the cure of our medical evils. A medical trust, no matter how euphemistically disguised, is still a medical monopoly. To-day's medicine is still in the control of a profession which has ideals and traditions of professional conduct and morals, who up to date have not measured their services by what they have taken from the community, but by what they were able to give.

PHYSICAL EXAMINATION AND MEDICAL SUPERVISION OF FACTORY EMPLOYEES.*

By W. IRVING CLARK, M.D., WORCESTER, MASS.,

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PHYSICAL EXAMINATION OF EMPLOYEES.

History of Development.—The physical examination of factory employees is a comparatively new undertaking. Previous to five years ago, except in Chicago, there was, so far as I know, no physical examination of employees by any factory in the United States. About 1910 an antituberculosis society of Chicago, under the efficient management of Dr. Sachs, succeeded in interesting a group of employers in the physical examination of their employees for tuberculosis. Following this work, other factories began considering the advisability of establishing examinations, with the point of view of increasing the efficiency of their force and assisting in the tuberculosis movement, which at that time was sweeping the country. In 1911 the Norton

* Read at the Conference on Social Insurance, Washington, D. C., December 6, 1916.

Company, at Worcester, Mass., started examining its employees, examination being complete and not confined only to the chest. About this time Dr. Harry Mock, of Chicago, was doing practically the same work, and I am inclined to think that he anticipated the Norton Company by one or two years, and is entitled to the position of the first to establish complete examinations. In 1913 a number of firms had taken to the idea, and during the last three years the movement has spread through many of the large factories in the country.

Mr. Mangus W. Alexander, of the General Electric Company, West Lynn, in a personal letter, states that after sending a questionnaire to 300 large firms in the United States, he received definite information that 35 firms were making physical examinations, as well as attending to the injuries of their employees. It is, therefore, evident that although the movement is spreading it is still very much in the air and has not reached large proportions through the United States.

REASONS IN FAVOR OF PHYSICAL EXAMINATIONS

Advantage to the Employer. A complete examination of every employee, while expensive, is undoubtedly of great advantage to the employer. First, because it enables him to select a man for the work to which he is best physically fitted. Second, because it enables the doctor who makes the examination to instruct and advise the employee of any defects which he may have and of which he is not aware, and by enlisting his cooperation enabling the man to overcome these defects, where possible, and thus to increase his physical efficiency. Third, it prevents the introduction into the factory of men who are undesirable because of severe defects. Fourth, it prevents contagious diseases entering the factory and becoming established there.

Advantage to the Employee.—First, while passing through his complete examination he is informed of any defects which he may have, and is assisted in obtaining relief. Second, he is not put to work for which he is not physically fitted. Third, he knows that every other man in the shop has had a similar examination and readily appreciates the fact that he will be thrown in contact with men from whom he cannot contract contagious diseases. Fourth, he feels that the factory is taking a personal interest in his condition and that he can go to the doctor for further advice if he considers it necessary. This is of very real importance to the average shop employee, who frequently moves from place to place and who has no family physician. Such a man feels pretty sure that the factory is not employing a man who is not perfectly competent to handle any condition which he may have.

OBJECTIONS TO PHYSICAL EXAMINATIONS.

Objections have been made to the theory of physical examinations by labor organizations on

the grounds that, first, it infringes upon the liberty of the individual; second, that it gives the employer an opportunity to reject a man on account of physical defects whom he would otherwise employ; third, it might enable groups of employers, by an exchange of information, to blacklist practically a man who had a serious physical defect from obtaining any work; fourth, that a factory by having a complete record of the man's physical condition, had information which was of a professional nature and, therefore, did not belong in a business institution. These objections can be met by the following arguments:

First. That no man is forced to subject himself to a physical examination, as he can go elsewhere for his work.

Second. That the precedent has been established by the United States Government by the physical examination of recruits for the army, navy and civil service.

Third. Examination is used definitely to help the factory find proper work for the individual, so that it is for his advantage to be examined.

Fourth. That the effort of the manufacturer is not to turn labor away, but to secure it, while he makes every effort in his power to utilize every group of labor which can be utilized.

Fifth. Examinations are made by registered physicians and assisted by registered nurses, and the records are kept with the same secrecy which is maintained in a hospital or in a doctor's private office.

Sixth. That men having serious defects are frequently placed in other factories where their defects can be assisted or remedied, which would never occur unless physical examinations were made.

Seventh. A factory is totally unable to care for the physical conditions of its employees scientifically unless a basic knowledge of the employee's condition at the time of hiring is on file for the doctor's reference.

COMPLETENESS OF EXAMINATION.

The physical examination of the prospective employee should be as complete as that made for first-class life insurance. The eyes and the ears should be tested, the teeth examined carefully, and the entire body put through the same examination which would be given a patient at a general hospital. Blood pressure should be taken on all cases by the auscultatory method and a urinalysis should be done on all cases over 40 years of age, and whenever the blood pressure indicates possible kidney trouble. If possible a urinalysis should be done on all cases in order to determine cases of diabetes. Employees having defects of a serious nature should be re-examined after a certain period of time, and should be instructed to report regularly at the shop hospital.

LINKING THE EMPLOYMENT DEPARTMENT WITH THE HEALTH DEPARTMENT THROUGH PHYSICAL EXAMINATIONS.

The employment department of a factory is in very close touch with the health department. It examines the men mentally, just as the health department examines men physically. The employment department, having determined that the man is mentally fitted for a certain type of work, turns the prospective employee over to the health department to determine whether he is physically capable of handling the work. If the health department approves after examining the applicant, every possible effort has been made to select the right man for the right position. This is of obvious value to the factory, but it is also of great value to the employee, because he is placed in a position where every advantage is given him to do the best work of which he is capable and from which he has more opportunity to rise than if in a department or position to which he is unsuited. So close is the connection between the two departments at Norton Company, that with the safety engineering department a triad is formed which has a bi-weekly conference upon matters where the three departments come in touch. The smooth and intelligent coöperation between these three departments produces almost ideal handling of the problems of the employee.

TECHNIC OF EMPLOYMENT AT NORTON COMPANY.

As this method is probably the same used in many other factories, we will cite it in order to show the way in which the prospective employee is handled. The applicant finds himself in a waiting room, well lighted and heated, and where he has a comfortable chair to sit in. When his turn comes he is taken to another room where he is given a seat at the desk of the interviewer. This interviewer takes his history, talks with the man of his past work, and endeavors to gauge his ability to fill any of the positions which are open. After having decided that the man is best fitted for a certain position, and his card having been filled out, he is taken and personally introduced to the doctor who will examine him. The examination is made with every care not to offend in the slightest degree. The man is shown to a dressing-room, where he removes the upper part of his clothes, and then steps into the examining room, where he has the same privacy that he would have in a doctor's office. The examination is made with rapidity but with great thoroughness, and the results are printed upon the physical examination card of the applicant. Before the examination is over the applicant has been completely examined from the top of his head to the soles of his feet. He is then told to return to his dressing-room and dress up. His physical examination card and the card filled out by the interviewer in the employment department are gone over together by the doctor, and the man is approved or dis-

approved for the work to which he is assigned. If disapproved, an effort is made to find another position in which he can be employed. In questionable cases the matter is taken up to the superintendent, who has the final authority. Whenever an employee is transferred from one department to another, when such transfer involves a change of work, another examination is made in order to determine whether any defects have developed as a result of the work he has been doing, and to make sure that he is fitted for the work to which he is now assigned. All examinations are entered on special cards, which are kept constantly on file, files being cleared as fast as men are discharged.

ATTITUDE OF EMPLOYEE TOWARD EXAMINATIONS.

The attitude of the employee toward examinations is distinctly favorable. In discussing this matter with a number of physicians in industrial practice, I find that there is little or no objection to the examination, if the applicant is given to understand clearly its advantage to himself and its necessity for his intelligent after-supervision.

During the last year we have made over 5,000 examinations of applicants at Norton Company, with only two refusals. These men stated they were seeking only temporary work, and did not consider it necessary.

I believe that with increasing knowledge of its value there will be little or no objection by applicants, all objections which I have encountered having been due to suspicion and lack of information.

EXPENSE.

The expense varies very greatly, depending upon the size of the factory and the completeness of general supervisory work done. Roughly speaking, the expense of examinations is about one-third of the total cost of running a medical or health department.

M. W. Alexander has recently compiled an expense chart which, after an analysis of 41 large factories having medical supervision, shows that the total expense of all medical service, exclusive of compensation for injuries, and all overhead expenses for 223,416 employees, amounts to \$1.88 per employee per year. This would make the cost of physical examinations \$0.626 per employee. At Norton Company we find that the expense of examining amounts to \$1.00 per year per position in factory.

REJECTIONS.

So much of the objection to physical examinations is based on the rejection of physically defective men, that I think the matter is worthy of some discussion. In the first place the number of seriously defective men who apply for work is extremely small. The majority of these men are too old for the work for which they apply, or they have defects which are curable.

In regard to age, you will note that I state "too old for the work for which they apply." By that is not meant too old to work. There are often positions with good pay open to these men, but we admit frankly that to reject a man because of his age and the multiple defects arising from it seems unfair as long as the man is anxious to work.

There are several solutions to this problem, such as pensions and special industries where there is less danger in the work, but these matters belong more to other sections of this meeting.

In regard to rejections for remediable defects, it is evident that it is for the good of the man directly that he should not be permitted to injure himself working when a simple operation or the fitting of proper glasses will not only remove all danger but greatly increase his efficiency.

In these days of free hospitals and clinics, poverty is no excuse for not attending to these matters when they have been pointed out.

At Norton Company the restrictive list of defects is rather severe, because of the heavy nature of the work, but the percentage of rejections even there is only 3.5, and many of these men are later accepted after their defects have been repaired. In a number of factories all applicants for work passed by the employment department are accepted regardless of their physical condition, the work of the medical department being simply to note the defects found and endeavor to remedy the same.

GENERAL CONSIDERATIONS.

The above briefly outlined is the present status of physical examinations among the larger factories. In consideration of the obvious benefits to both employer and employee, it seems that the cost is justified and that the idea will spread. Dr. Hayhurst has developed a method by which groups of small factories can employ between them a physician so that the advantages of the idea are possible to all.

There are some broader possibilities in the universal adoption of physical examinations than at first appear.

The most difficult cases coming to a general hospital are those where the individual has ignored his physical condition or treated himself. Very many pathological conditions, if discovered early, can be cured outright, and many more held in check.

The average worker calls in a doctor only when he is seriously sick. A very large proportion, I should say, roughly, over 60%, have no family physician but call in the nearest physician. The majority of men if they are told of a physical defect and how it may be relieved or cured, follow the doctor's advice at least for a time, especially if that advice is consistent with their regular work. From this it will be seen that physical examinations have a strong tend-

ency to increase the health of the community, to make workmen more efficient, and to prevent absolute martyrdom in many cases.

Prevention is the present slogan of medicine. But prevention, to be of any value, must begin with the individual. Much can be done by education through the schools; much can be done by popular articles in papers and magazines, but on final analysis the only way really to accomplish preventive medicine is by personal contact with the individual. Thus every man examined as I have outlined above, knows either that he is sound or that he has defects, and if the latter, what he should do to remedy them; he knows the type of work for which he is best physically fitted; and, finally, he knows what a thorough examination is.

When we consider the possibility of all the workers in the country having this knowledge, each one being examined and reexamined as he passes from department to department and factory to factory, we see a possibility of preventive medicine affecting the entire country, and one perfectly possible of realization.

MEDICAL SUPERVISION.

Medical supervision begins as soon as an applicant for position becomes a member of the factory force. As we have pointed out, it begins during his physical examination and it continues until he leaves the employ of the company.

Medical supervision consists in:

1. Reexamination of defective workmen at varying intervals.
2. Reexamination of workmen transferred from one department to another.
3. Examination and advice with simple treatment in all cases of sickness.
4. Prevention of contagious disease by its immediate isolation when discovered, and by prophylactic inoculations and other measures.
5. Immediate treatment of all cases of accident occurring in the factory.
6. Subsequent treatment of all accidents occurring both in and out of the factory until the patient is able to resume his duties.
7. Supervision of sanitation.
8. Health publicity through monthly leaflets distributed in the pay envelopes.

Medical supervision can, therefore, be divided into the care and supervision of the sick, the care and supervision of the injured, and preventive measures.

The care of the sick is most important to the employer, employee, and the community. Very satisfactory results are possible by a well-organized health department.

The majority of sickness is preventable or can be ameliorated by prompt recognition, advice and attention. There are undoubtedly many acute ailments to which this does not apply, but the majority fall into this category.

By careful reexamination, considered diagno-

sis, and thorough detailed advice, the patient is given every opportunity for a quick recovery. Many minor conditions are treated specifically with simple drugs. These conditions are those for which the employee would not seek an outside doctor's advice, but which, if not cared for intelligently, materially reduce the working capacity of the individual, and may in time lead to more serious conditions.

The opportunity for more careful clinical study of the beginning of many pathological conditions is greater in the health department of a large factory than in any clinic, while the daily presence of the employee at the works gives the best "follow-up" facilities possible.

The industrial physician should, however, treat no case needing careful, constant medical attendance, nor should he attempt to treat men having sickness severe enough to incapacitate them for work.

For such conditions the patient should be sent at once to his family physician with all the data on the case the factory has been able to obtain.

In this way physicians will not only get their patients early in their sickness, but they will get information from the health department which may materially aid their diagnosis of the case.

As I have said before, I like to consider the purely medical function of the factory health department as a diagnostic clearing house.

SUMMARY.

The medical supervision of the sick should, therefore, be preventive, not curative. Its advantage to the employee is that sickness can be lessened, physical efficiency increased, contagious disease prevented, and absence due to sickness materially reduced.

Its advantage to the employee is obvious. When we realize that the proportion of time lost from sickness is from seven to ten times that lost by accident, the importance of reducing this to a minimum is evident.

CARE OF INJURED.

The care and supervision of the injured is so universal in the industrial world that there is now hardly a factory in the country which does not make some provision for its injured employees.

This very satisfactory condition of affairs has been brought about partly by the voluntary assumption of the obligation and partly by the Workmen's Compensation Act.

This care in many cases is limited to that provided by insurance companies, but in large factories it forms a part of the supervision, and is considered as a part of this work. To a surgeon who has worked in out-patient clinics for years, treating the many cases of sepsis arising from untreated accidents, which result in loss of time, loss of limbs, and sometimes of life, the results

of the immediate treatment of injuries occurring at a factory are nothing short of marvelous. Hundreds of consecutive injuries have been treated in factory hospitals without a case of infection, and when infection does occur it is handled so promptly and efficiently that the condition is stopped before it has a chance to become established. Moreover, in factory hospitals, treatment is not confined to the legal limit of two weeks. The patient is treated until he is able to resume work, and in this way much time is saved to patient and factory by the constant attention to the injury and the encouragement the patient receives.

Thus the one great weakness of the Workmen's Compensation Act, which limits the expense of medical treatment to two weeks, is overcome. Could anything be more thoughtless than a law which gives a man with, say, a broken arm two weeks' medical attendance free, and then, at the one time when he needs careful supervision most, to throw him on his own resources, necessarily reduced because of his lack of two weeks' wages.

PREVENTIVE MEDICINE.

Preventive medicine presents tremendous possibilities in hygiene and sanitation, but even greater possibilities in the promptness by which contagious disease is discovered, reported to the board of health, and isolated.

It is hardly necessary to point out the advantage to the community and individual of the early recognition of pulmonary tuberculosis, while actual prevention of typhoid fever can be obtained by the administration of vaccine. In no way can industrial disease be studied and measures for its prevention established but by medical supervision of the factory health department.

At Norton Company and in many factories a continuous campaign of health publicity is maintained by the publication of leaflets written in clear, simple language, illustrated when possible, upon subjects of health preservation and the symptoms of the more common diseases, coupled with simple advice as to their prevention.

COST.

The expense of maintaining such a health department in a factory varies with the extent and thoroughness of its activity. At present at Norton Company it amounts to \$3 per position in the factory per year. A careful digest of this question, with statistics, has recently been published in the *Iron Age* by Mr. Alexander.

SUMMARY.

And now let us consider briefly what all this means. It means first that by a comparatively small expenditure the factory obtains men physically fitted for their work, men supervised medically, so that they are kept in the best physical

condition, men who will be absent from work for a minimum time when injured or sick.

It means contented workers who realize that the factory takes a personal interest in their health and well-being.

It means a reduction of sickness in the community.

It means a minimum of permanent disability and rapid return to work after accident.

It means a quick prevention of the spread of contagious disease.

It means better and more hygienic working conditions.

It means a reduction and prevention of occupational disease.

It means a constantly increasing knowledge by workers of simple rules of health and prevention of disease.

If universally adopted, it would mean a physically and mentally better country. The sinews of production ever strengthened and guarded, the factory would cease to be considered a consumer of human lives, but would be considered rather as an educator and supervisor of health.



THE FALLACIOUS SOCIAL PHILOSOPHY OF HEALTH INSURANCE.*

By FRANK F. DRESSER, WORCESTER, MASS.

I do not intend to bother you with the special problems which the employer as such must meet under the proposed health insurance measure. They are briefly:

The irritation and misunderstanding which are bound to arise between employer and employee when the former makes any deduction from the weekly wage for a cause not connected with the work;

The very considerable expense which will be occasioned to industrial employers and the annoyance and trouble to employers of agricultural and domestic servants by the constant bookkeeping, collecting and forwarding to the proper insurance carrier of the weekly contributions; an expense for clerical work merely which will amount to not far from a million dollars a year in Massachusetts;

The continued legislative changes which any statute, however perfectly framed, is bound to undergo at the demand of political exigency or selfish interest in this land of easy law-making and the constant and expensive readjustments which such changes involve;

And lastly, the disadvantage which employers in the states which first adopt the measure will find in competition with employers elsewhere.

But these problems are selfish and, in comparison with the whole question, trivial, and, as

a matter of fact, I do not believe they will ever arise, for to me it is inconceivable that this Commonwealth, or any other of our states, will adopt a measure based upon the social philosophy which is the foundation of health insurance, once this basis is understood.

It is unnecessary for any one to tell an employer of the advantage of healthy employees. He knows better than any one else how seriously his profits are curtailed by the absence and ineffectiveness of workers, and he knows what wages they thereby lose. He finds this absence and ineffectiveness to be caused, not only by accident and by sickness, but by intemperance, by voluntary absence, by feeble-mindedness, by lack of vocational training, by sheer thriftlessness. It is surprising to find that the voluntary absence of wage-earners—that due to ball games, vacations and the like—is about as great and causes about as great a wage loss as the total absence and wage loss due to sickness and accident combined. Each of these means loss to him and loss to his workers. Whatever will diminish any of them inures to their mutual advantage.

If health insurance, as proposed, would reduce illness, the employer would believe in it, but it is because it will not reduce illness, and the cost is so disproportionate to any possible advantage, that he not only disbelieves in it, but feels that the desirable results can be obtained more cheaply and more effectively in other ways.

The reason that health insurance will not be effective is because in its essence and in its machinery it is a measure of relief and not of prevention.

It is relief, or charity, because a fund is provided for the benefit of a class in the community to which that class contributes only a portion, and the rest of the community pays the balance. For health insurance covers those only who are efficient enough to get and keep some kind of a job, but those who are so incapable or unfortunate that they cannot hold a job—the unemployable, the casual worker, the aged—are not covered at all, and the class which now fills our jails and poorhouses, and drains our charities, will still continue to prosecute their only successful occupation. And also, because the measure applies only to employees; the large class of the self-employed, the small farmer, the small shopkeeper, the charwoman, the huckster, the journeyman, the home-worker, are without its scope. Yet these self-employed, though subject to the same risk of illness, and in the same economic conditions, must, nevertheless, contribute through the higher cost of their living, to the twenty-three millions of dollars which this measure will annually cost in Massachusetts for the benefit of the wage-earners alone.

The contributions of state and employer finally filter back to the consumers by way of

* Delivered before the Massachusetts Society of Examining Physicians, Jan. 8, 1917.

higher rents and larger prices for foodstuffs and materials which insured and uninsured must pay alike. It is doubtful whether the mass of poverty is diminished when one section of the poor is compelled thus to contribute to the alleviation of another.

It must be possible to devise some fairer form of relief, which shall reach all who are in need.

Health insurance is not a measure of prevention, because it hides and does not disclose responsibility, and to make any progress in preventive work you must first fix the responsibility and then assess it. The Compensation Act does this, but health insurance does not.

For example, every employer, bank, store, railroad, mill, farmer, housewife, pays the same proportion—two-fifths—but the responsibility is not the same; the responsibility of a bank in causing illness differs from that of a store or a railroad; the responsibility of a housewife in causing illness differs from that of a mill. Nor is there a distinction made between the responsibility of a dirty or a clean mill. The careful employer, associated with others who are less scrupulous, nevertheless, bears the same proportion of the loss they occasion. There is thus no merit to be obtained by a particular mill through reducing its sickness loss.

The same is true of the employee's contribution. His responsibility is by rule of thumb fixed at two-fifths, regardless of his environment, whether in city slum or healthful town, or his intelligence or habits of life.

Nor is there any distinction in the cause of the loss. The man whose illness is caused or prolonged by venereal disease or alcoholism is compensated as if he suffered from a malady to which his occupation contributed. The losses of non-industrial accidents are included, and these are greater in number than industrial accidents. Thus, if your cook is run over by an automobile on her afternoon out, or if my workman falls down his cellar stairs, they may come upon their respective funds.

The State under all conditions has its responsibility fixed at one-fifth, but if a backward town fails to install a proper water supply or if an inefficient local board of health fails to control an epidemic, employers and people insured and uninsured in the district suffer alike.

There is even a more glaring disregard of responsibility when the proposed measure is applied to Massachusetts. Our State alone now compensates for diseases which industry causes. Here it is possible for the worker to recover, under the Compensation Act, to which he does not contribute, his loss from a strictly occupational or a partly occupational disease. That measures the full responsibility of the Massachusetts industrial employer. Any charge to him beyond that is a charge for a responsibility which he does not have. The Act in Massachusetts, therefore, must either repeal this existing rule or be confined to the employers of agricultural and domestic servants and those indus-

trial employers who are outside the Compensation Act.

Because health insurance, as proposed, is a palliative rather than a discoverer and assessor of responsibility, it brings in its wake all the evils of charitable relief. Illness, as we well know, may be largely a state of mind. A person may, if he wills, yield or fight against it, but every provision of the measure is a temptation to the benefited person, as it would be to you and to me, to yield. Malingering has proved not only the bane of sickness compensation abroad, but we are told that it is a large cost in the health insurance business of private companies today. I trust that you will become familiar, if you are not already, with the medical investigations along these lines that have taken place in Germany. If I am correctly informed, it is very generally felt, not only by many physicians and economic investigators, but even by officials of the German Fund, that a knowledge of insurance not only sometimes causes, but frequently unduly prolongs, illness. For example, the cure of a fractured collar-bone, which used to take from twenty to forty days, now takes about eight months—and other things in proportion. Dr. Rubinow is my authority for the statement that the average number of days lost through sickness has risen in Germany during its insurance experience from six to nine days a year, and that even in the Leipzig Fund it rose from nine days to 10.4 in 1912 and to 11.3 in 1913. Insurance, therefore, has not reduced the sickness loss in Germany, and we may well wonder whether insurance here will operate to decrease or to increase our present sickness rate. The peak of expenditure for this relief has not yet been reached in Germany, and the investigators that I have mentioned state that its evil moral and hygienic results are increasing. We may well pause when a responsible German official terms this system "the all-pervading cancer that is destroying the vitals of our State." These are criticisms the truth of which we should clearly know, for it may be that in attempting to remove the tumor of poverty we are grafting a cancer in its place.

But the matter that most vitally interests you, and is the most important detail of the plan, is medical service.

This has been the difficult and disappointing feature of every system abroad, and there is yet no suggestion made which will remedy its evils here. The solution of the problem lies with the doctors and with no one else, but in deciding they must consider the conditions of the community in which they live, the standards and conditions of medical practice, and the frailty of human nature, from which even this best loved profession is not exempt. Medicine is a profession and not a business. It does not provide a commodity to be weighed, measured and sold in the market, but a service, intangible and invaluable, and measured by the conscience of

the giver. No layman can judge of it and, if competence be assumed, the adequacy of the service to be rendered rests almost wholly with the physician himself.

The first requisite, therefore, it seems to me (and please believe that I speak with humility and fear, for I do not listen with much patience to the crude comments of laymen on my own profession), is to make certain that the physician's conscience shall become more, rather than less, tender, that his standards of competency and adequate service shall rise and not fall.

Will the proposed plan raise or lower present standards? You can tell. I cannot. But unless it will surely raise them, then it is bad, and bad, not only for the profession, but for the community at large.

I feel safe in saying that if these local associations are to have anything whatever to do with providing medical care, that the result will be bad. Let us imagine the directors of the Machinists' Association or of the Housemaids' Association met to decide what method of medical care they will provide, what physicians and how many they shall employ, what they shall pay and what regulations they shall adopt. A dozen men or women, half employers and half employees, equally ignorant of medical requirements and attainments, filled with the loyalty that each of us has toward his own physician, agreed only on the principle that the cost must be kept down, met to solve by themselves a problem that no country abroad has yet successfully solved and that even the able proponents of this measure do not attempt! The statement of such a scheme makes it absurd. Can we believe that a board so constituted will know, or willingly provide, the modern requisites for adequate care, or that its methods will tend to more perfect, rather than to more slovenly work?

But what are our Massachusetts needs today? Here, better perhaps than in any state in the Union, the rich and the very poor throughout its territory can get competent medical treatment, but here, as elsewhere, the great middle class cannot; and they cannot get it, not because of poverty (the Dutchess County Survey, you will recall, showed that poverty was not the controlling cause in 79% of the cases that had inadequate care) but because your profession has made such amazing advances in the last twenty years that you have not had time to organize yourselves to provide it.

I wonder if the young, well-trained practitioner of today does not have to make many compromises with his conscience during the first few years of his practice. Coming from school and hospital, he feels the need of facilities for diagnosis that perhaps his means cannot provide. He feels even more the lack of power to call upon consultants. He knows that a charity patient at a hospital could have the service of every needed specialist, but he knows that his own patient at home, though expecting to pay according to his means, must be denied it, and

that his own guess cannot be checked or guided by other aids. If this young practitioner glides into practice among persons better off in the world's goods, his knowledge and competency increase because he is constantly taught by and associated with good men in other lines, but if his practice tends to be among the poorer people he has little chance to grow in wisdom, and he and his patients suffer.

Is it better for a patient to have competent service within his means of payment or to have indifferent service which is free to him? From the standpoint of the community at large there is no question, for the community has to pay the bill in either case.

Is not this the real question, and cannot you Massachusetts men solve it, and let the rolling prairies of the West have insurance and herb doctors if they choose?

There is a germ of a possible solution with which I have become infected.

The State Board of Health, or other proper State authority, could establish and maintain, in convenient municipal and country districts, diagnostic stations, with all necessary equipment, and with which all physicians practising in the vicinity should be connected. Such stations would have the library, the apparatus, the facilities for all necessary tests, with a pathologist, I suppose, in charge. The limits of the district which each station would serve would be clearly defined, and all illness occurring within the district would be reported to that station, with such safeguards as were proper to protect professional secrets. All physicians, wherever they lived, would as a condition of practice, be required to belong to the staff of some one station, although their practice would not be limited to the district of that station. At each station consultants or specialists would attend at stated times, to advise and examine the cases or patients who were brought there by the attending physicians. Such consultants would either be elected by the staffs of the stations or appointed by proper authority, and their fees for consultation at these stations would be fixed at so modest a sum that their service would be denied no one with any ability to pay. This would not, I take it, decrease the total income of such physicians because it would open up new fields. The fees or conditions of practice otherwise would not be affected nor would the regular hospital work. These stations might have in residence one or more physicians to answer the emergency calls or do the charity work of the particular district, and the district nurse might have an office there.

By requiring the illness of the district to be registered, the needful knowledge for preventive work or regulation would be secured.

The idea is to establish the closest cooperation in the several lines of professional endeavor, to mobilize in these groups all medical facilities and all practitioners and so bring the most competent care at the least cost to the door and to

the knowledge of everyone. Such organization would, I think, create an "esprit de corps," a force to elevate rather than to lower standards, a greater opportunity for the competent and ambitious young man, and a possibility of discovering and, through State authority, eliminating the unfit.

It does not contemplate giving free medical service to people other than those who now and always must receive it. There is no more reason for giving free medical service than free food. It is an attempt to bring adequate service within the means of all the people for the advantage of the patient, physician and community alike.

Of course the cost would be great, but it would be less than the medical costs under health insurance, and it would be paid by all for the benefit of all, not paid by all for the benefit of a few. I suppose that such stations could be obtained and equipped for a less amount than one year's contribution by the State to the health insurance fund, and that they could be maintained for not only a less amount than that, but for a sum less than the administrative costs which health insurance requires and which are theoretically wasteful.

But all these matters are details of the question, and I want for a moment to call your attention to the broader and more important issue that lies beneath this legislation.

Is the social philosophy on which health insurance and its sisters,—maternity insurance, invalidity insurance, old-age pensions and perhaps unemployment insurance,—rest a philosophy which we are prepared to adopt?—for we must agree that it is new and somewhat startling to our principles. We have been born to a belief in the individual; on that our State was founded; by it our progress has been made; because of it new peoples have come to our shores.

Elihu Root has lately stated it: "The central principle of our system of government is in the proposition that every man has a right to full and complete individual liberty, limited only by the equal liberty of every other man. . . . Our whole system of law is in its essence only the enforcement of the reciprocal limitations of individual liberty. . . . The justification of all laws and customs which constrain human conduct is that they are necessary and appropriate for the preservation of the liberty of others. Whatever law passes beyond that limit and seeks to impose upon the individual the ideas of others as to what his conduct should be, whether to subserve the interests of others, or to conform to their prejudices or to their ideas of propriety or wisdom, even though those others may constitute an overwhelming majority of the whole community, is a violation of the principles upon which our government was formed."

So, too, President Hopkins of Dartmouth: "We who believe in democracy as a political system do so in the full recognition of the fact that its merits are not secured without very considerable sacrifices.

Its virtues lie in the free play it gives the individual volition, which it puts under restraint only at the point where it must be curbed that other individual volitions may have their like free play. Thus to those of us who wish to live our own lives, with the minimum of outside interference, democracy becomes a very precious thing."

But the philosophy of health insurance is not individualism, it is collectivism; it is not democracy, it is the aristocracy of class.

The collectivist believes that the welfare of the state as a whole must be sought, because if the state is prosperous its members will be, and therefore the needs and desires of the individual must be subordinated to the advantage of the mass. John Smith, the individual, with his human desire to live his life under the law in his own way, wise or foolish, as it may be, is disregarded, and a class is created which shall live by rule, with part of its earnings taken and expended for it, with its illnesses scrutinized, with a dole given when misfortune comes.

For the first time in our history our democracy shall be stratified. A group shall be segregated and marked as incompetent to bear the common lot or live the common life.

That may do in Germany, where robber-baron and peasant have only lately changed to an aristocracy of bureaucrats and wealth; where property gives political power, and two per cent. of the inhabitants of Berlin elect one-third of its representatives, and four men have a similar voting power among the hundred thousand residents of Essen.

That may do in England, where, though there be political freedom, the class distinction of birth and land is hard and fast, and where great wealth, on the one side, is matched by a dire poverty unknown to us.

But that is not our American birthright. Our Commonwealth was founded on the dignity of the individual, not on the dignity of his birth, his purse or his calling. Opportunity to obtain the highest or the lowest place in our society is still open to everyone, and the ebb and flow of our people from one to the other is constant. It is our duty to keep this door open, not by the stratification of our society, not by regulating the life of the individual, but by regulating the conditions under which he lives and works.

AMERICAN RED CROSS, BOSTON METROPOLITAN CHAPTER.—The Boston Metropolitan Chapter of the American Red Cross has issued a special appeal for an immediate fund of \$50,000, to provide first requirements for preparation in case of war, including equipment for three base hospitals of 500 beds each, and one sanitary training detachment unit. Of this sum \$8600 have already been subscribed. Contributions should be sent to James Jackson, Esq., State Street Trust Company, Boston.

Original Articles.

FAT EMBOLISM A CAUSE OF SHOCK.

By W. T. PORTER, M.D., BOSTON.

[From the Laboratory of Comparative Physiology in the Harvard Medical School.]

I.

At the beginning of a study of traumatic shock in wounded soldiers in France and Belgium,* I asked what wounds were most often followed by shock. The surgeons at Compiègne and La Panne replied that shock was most frequent after shell fractures of the femur. It was less frequent after the fracture of the smaller humerus. These facts seemed to me very significant. Most of the shock wounds were from shell fragments, and shell fragments tear the bone and thus lay bare considerable areas of the bone marrow. The conditions for absorption from the bone marrow are excellent. Naturally, the investigator of the cause of shock would think first of the absorption of some soluble chemical agent that would cause the typical fall of blood pressure. It is known, however, that extracts of bone marrow, on injection into a vein, do not seriously disturb the circulation. The innocence of extracts seemed to exclude the production of shock by the absorption of a chemical substance present in the marrow. Yet there remained an undoubted relation between shock and broken bones. While revolving these facts in my mind, I read the paper in the *American Medical Journal*, 1916, p. 1926, in which Dr. W. W. Bissell again calls attention to the astonishing amounts of fat in the blood stream of persons with broken bones. I determined then to produce experimental shock, if possible, by injecting fat into the jugular vein.†

Fat embolism has been studied experimentally for two and a half centuries. I have made no effort to master its enormous literature, but I believe the following statements cover the facts that are of special interest here:

1. The fat in bones is in a condition peculiarly favorable to its entrance into the blood vessels after fracture.
2. Large quantities of fat have repeatedly been found in the blood vessels after fracture.
3. The entrance of fat into the blood vessels begins immediately after the wound.
4. Frequently, if not always, there is fat embolism of the brain and other organs.
5. These facts have often been observed in men; they are equally true of animals in which fat is injected into a vein.

Notwithstanding the very numerous clinical

* See this JOURNAL, 1916, clxxv, pp. 854-858.

† Subsequently, I was encouraged in this idea by a remark of Professor Mallory, in whose laboratory at the Boston City Hospital Dr. G. S. Graham had studied fat embolism from another standpoint in 1907.

and pathological studies of fat embolism, there has been, heretofore, no attempt to demonstrate by measurements of the blood pressure a causal relation between fat embolism and traumatic shock. Yet the following experiments will show that this relation can hardly be denied.

II.

The experiments to this writing are eight in number. They were performed on cats. In the first experiment, Feb. 2, 1917, about 3 cc. of the official emulsion of olive oil was injected slowly into the jugular vein. Very soon there was a fall in the carotid blood pressure. It was recorded by a membrane manometer, which also recorded the force and frequency of the ventricular contractions. In two further experiments thick cream was used, and in the remainder the fat was neutral olive oil. The injection of from 2 to 4 c.cm. of olive oil in a large cat has never failed to produce a fall of blood pressure to one half or less the normal level. Thus on Feb. 5, the diastolic blood pressure fell quickly from 140 to 65 mm. Hg., and later to about 40 mm. In this cat the tracing showed that the fall in blood pressure could not be ascribed to changes in the heart beat. The same is usually true when the injection is not made too rapidly. The clinical picture is essentially similar to that of traumatic shock in human beings. Similar also is the beneficial effect of inclining the animal until the portal vessels are higher than the heart and brain.

III.

The following conclusions may be drawn:

1. Fat, often in large quantities, is known to enter the blood vessels in traumatic shock, the essential feature of which is a characteristic fall of blood pressure.
2. A similar fall, with the same resultant symptoms of shock, may be produced experimentally by the injection of fat into a vein.
3. Fat in the blood stream is known not to be injurious *per se*; its injurious effects are the product of fat embolism.
4. Fat embolism is a cause, though not necessarily the only cause, of shock after fracture of the bones.

SHOCKLESS SURGERY. PARAVERTEBRAL ANESTHESIA WITH SCOPOLAMINE AND NARCOPHINE: A PRELIMINARY REPORT.

By A. R. KIMPTON, M.D., BOSTON.

VERY little attention has been given to this form of anesthesia in this country, particularly in this section of the country, and I wish very briefly to report a few cases; later a complete report will be made.

Paravertebral anesthesia was introduced by Dr. Bernhard Kroenig of Freiburg, Germany.

Briefly, the method is the use of scopolamine and narcophine, followed by conduction anesthesia outside the dural space by means of one-half of one per cent. novocaine. I have used this method ten times, and feel that it is something that we are all coming to, especially in poor operative risks.

So far as I have observed there has been no shock whatever, and the patients remember little or nothing concerning the operation. They are relaxed, and exploration of the entire abdomen was made in my abdominal cases. *False teeth should be removed, as in ether anesthesia.* There probably will be some post-operative distention and pain, as after other forms of anesthesia, but so far my patients have had almost none of the first and very little pain.

All of my cases, with one exception, have been most beautifully anesthetized by Dr. Frank Konrad, who translated Dr. Kroenig's paper published in *Surgery, Gynecology and Obstetrics* for May, 1916, pp. 524-533.

To be successful, the conduct of the local anesthesia should be by a man trained for it, as ether anesthesia should be. I have Dr. Konrad see the patient the day before the operation, and he leaves his directions. The day of the operation Dr. Konrad arrives first, and the patient is ready for operation at a stated time. They are operated upon as though etherized, without further delay of local infiltration. It is not a method of local anesthesia for the surgeon to carry out, but I can most heartily recommend it as carried out above, and a further full report will follow.

My cases have consisted of:

Two very severe exophthalmic goitres, both operated upon with perfect satisfaction as to anesthesia.

One breast.

One inguinal hernia.

Two empyemas, one a child that died the next day. The death was due in no way to anesthesia, but rather to a neglected empyema. In this case scopolamine and narcophine were not used.

Two hysterectomies, one of the size of a sixth month pregnancy.

One papillary cystadenoma of the ovary. The tumor was tremendous in size, the patient not having been able to lie down for over two years. The adhesions were most troublesome. The operation was one that should have given tremendous shock to this elderly woman. She had none whatever, and the tumor not only filled the abdomen but displaced contents into the chest. This was a truly severe test of the method and a most perfect anesthesia.

One cancer of the urinary bladder. The anesthesia in this case was a complete failure, because not enough nerves were blocked off,—in other words, error in application.

Clinical Department.

AN INTERESTING TONSIL.

By JOSEPH PRENN, M.D., BOSTON.

It is the consensus of opinion of most of the profession that rheumatism, myositis and articular, is an infection secondary to a remote local infection; that the portal of entrance of this infection is usually through the tonsil; that the initial infection may take place in the mucous membrane of other parts of the body, such as the gums, nose and the sinuses, ear, pharynx, larynx and bronchi, intestines, and penis.

The mucous membrane being thin, highly vascular, full of lymph follicles, is capable of absorption either of the bacteria, when the surface epithelium has been destroyed by their chemical action, or of their filterable toxins.

That the absorption will be the greater when the inflammatory exudate is hemmed in with deficient or no drainage, is reasonable, and substantiated by observation. Hence, in carious teeth, where the pus is incased in the mucous membrane of the gums, in nasal catarrh, acute or chronic, with septal or turbinal obstructions, when drainage is deficient and when pus is incased in the sinuses, absorption will more readily take place.

The tonsil affords the greater absorption on account of its peculiar anatomical structure. This gland has many crypts from which numerous follicles branch out into the substance of the gland and are covered by mucous membrane, thus affording a larger area for absorption. The crypts are narrow, so that with the swelling of the mucous membrane due to inflammation, the exudate is closed in. The drainage is still more retarded on account of the natural position for physiological purposes of these crypts. The latter do not travel through the tonsil from above down, with the orifices pointing downward, but are at about right angles to the inner surface of the tonsil and their course is somewhat tortuous, so drainage is difficult.

We consider the tonsil injurious and its removal imperative when it has undergone repeated attacks of acute inflammation, with resulting general toxemia. The tonsil, in the first place, may be normal, but the patient is below par so that he cannot cope with the virulence of the microorganisms.

To diagnose a diseased tonsil is not so easy, and we must be guided by the subjective and objective symptoms, and the former are very important. Under objective symptoms we have soft, boggy tonsils, crypts full of debris, enlarged cervical glands (ruling out other causes). The amount of visible debris in the crypts of the tonsil is not always in proportion to the disease of the tonsil. It may simply mean a dilatation of the crypt by the pressure of the debris, with very good drainage. We see it some-

times in older people who do not manifest any other objective signs and subjective symptoms. Its significance is only together with either objective or subjective symptoms, showing obstruction in the depths of the crypts. The latter may be so dilated as to coalesce with the destruction of the intervening glandular structure, simulating Vincent's angina, or specific tonsil, when in reality it is nothing but a necrotic tonsil, as is proven by the absence of any inflammatory zone or spirilla, and a negative Wassermann. In cases of this sort, even in the presence of cervical glands, slicing of the whole length of the tonsil, so as to establish drainage, may be sufficient.

What can we expect from the enucleation of the diseased tonsil? Certainly, the removal of a focus for new infection. We cannot always, however, expect a cure of the rheumatic infection on account of the "local tissue sensitivity, and living bacteria in a metastatic lesion may continue the process independently of the focal source."

The case I am about to describe will illustrate the importance of subjective symptoms alone.

A woman of about thirty, married, enjoying good health, well developed and nourished, bowels regular, had follicular tonsillitis about eight months ago. Since then she complained of rheumatic pains in the right side of her neck, and practically all the joints. At times the pain would be very severe, so that she was unable to sleep. Osteopathic and electric treatment did not seem to help her case. Dr. H. Morrison, unable to find any cause for her rheumatic infection, considered the tonsil as a possible focus. On examination, the teeth were in good condition, nose normal, the tonsils were small and submerged, of normal appearance and consistency. The right tonsil, however, on the side of the neck of which she complained of pain, was adherent to the anterior pillar, no crypts could be made out at all, and it appeared a little bit harder than normal. It gave the impression of tension. Operation was advised on the following ground, assuming that the orifices of the crypts were closed by previous inflammation, incasing within them some infectious material. The writer was prompted to this conclusion mainly by her subjective symptoms.

Enucleation of the tonsils was performed. On cutting the right tonsil open, free pus welled up from all the crypts, showing that it was under tension. It was demonstrated to the satisfaction of Dr. Morrison and myself. The symptoms had greatly subsided soon after.

BIBLIOGRAPHY.

- Gray: Anatomy.
Deaver: Anatomy.
Bailinger: Nose, Throat and Ear.
Rosenow, E. C.: Jour. A. M. A., Vol. lxvii, No. 9.

Book Reviews.

Mentally Deficient Children. By G. E. SHUTTLEWORTH, B.A., M.D., and W. A. POTTS, M.A., M.D. Fourth Edition. pp. xix, 284. Philadelphia: P. Blakiston and Sons Company. 1916.

A great many books on mentally deficient children are very unsatisfactory because of the one-sided treatment of the subject; but this book, though small, covers the field in a surprisingly satisfactory manner. The authors show repeatedly an accurate knowledge of the work that has been done in the United States, both in the development of the care of these children, and the methods of training, and also works done in this country in other directions, as psychological and sociological.

Although it is unkind to lay undue emphasis upon minor points, when one knows the enormous difficulty of choosing what shall be passed over lightly, or omitted, when the space at one's disposal is limited, it seems a serious defect in the chapter on mental examination that space should not have been found for a description of the modern mental tests, such as those of Binet-Simon, Dr. Fernald and Dr. Healy. This omission, and the rather unsystematic account of what is known of the pathology of cases of mental defect in children, are the most unsatisfactory parts of a book which deserves to be widely read, not only for the large number of facts made accessible in handy forms, but also because of the judgment with which it is written, the certain mark of men of wise experience and maturity.

Progressive Medicine. Edited by HOBART AMORY HARE, M.D., assisted by LEIGHTON F. APPELMAN, M.D., Dec. 1, 1916. Philadelphia and New York: Lea and Febiger.

This fourth issue for the year 1916 of this standard American digest of advances, discoveries and improvements in medical and surgical sciences, deals particularly with diseases of the digestive tract and allied organs, the liver, pancreas, peritoneum, kidneys, genito-urinary diseases and surgery of the extremities, including shock, anesthesia, infections, fractures, dislocations and tumors. There is also a practical therapeutic referendum, noting alphabetically the principal advances in materia medica during the past year. The volume is well illustrated with ninety-six figures in the text and maintains its familiar standard as an epitome of medical progress.

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THE SHADOW OF WAR.

SINCE the previous issue of the JOURNAL was on the press, the great European War has cast its shadow even more menacingly upon America. The severance of diplomatic relations between the United States and Germany, though by no means making war between these countries inevitable, brings it measurably nearer. It should be the earnest wish of every humane and loyal American that actual hostilities and bloodshed, between two great nations of cognate race and ancient friendship, may be avoided with honor. In the unhappy event of a declaration of war, the duty of every American citizen is written with unmistakable clearness, whatever his previous sympathy and interests. Upon the medical profession would fall the obligation of discharging under the conditions of war the same duties to which it is devoted in times of peace. Whatever the position, civil or military, which it may become his lot to occupy, every member of that profession may be relied upon for unfaltering loyalty to his country and to humanity.

INDUSTRIAL HEALTH INSURANCE.

SINCE the latest editorial discussion of the subject in the JOURNAL, the consideration of industrial health insurance and workmen's compensation has continued among both legislators, physicians, and the public at large. In another column of this issue of the JOURNAL we publish a report of the meeting held in Washington, to correlate, if possible, the various interests and points of view involved in the question. We also publish in this issue a separate group of papers devoted to different aspects of the same subject. Two of these were among the papers presented at the Washington meeting; the third represents an address delivered before the Massachusetts Society of Examining Physicians on January 8. This paper by Mr. Dresser of Worcester was in direct rejoinder to an address in advocacy of industrial health insurance by Dr. Rubinow. Finally, we are also publishing in this issue a statement presented by Mr. F. M. Williams at the Washington meeting, summarizing the compensation laws already in force in the various states of the Union. The JOURNAL has previously stated its critical and judicial attitude towards industrial health insurance and cognate forms of social legislation. In its issue of February 1 was published the text of the proposed new Young bill, with editorial comment. The JOURNAL has freely admitted, and will continue to admit, to its columns contributions discussing these important subjects from every point of view. The present group of material is published as a further contribution towards illuminating and clarifying professional and public opinion. The bearing of present and proposed legislation on the welfare of the medical profession and of the community is so momentous that all disposed to partisanship should weigh carefully the arguments of all sides before reaching a decision.

THALAMIC LESIONS AMONG CIVIL WAR VETERANS.

ALTHOUGH our knowledge of the optic thalamus and its lesions has been given considerable impetus since the published experiments of Ernest Sachs, in 1909, we are still somewhat at sea as to the exact relation which that organ has to the emotions. Guilfoyle considers it proved beyond question that there is some connection;

what it is he does not know. We know the loss of control over the usual expressions of emotion, laughing and crying, that is associated with the thalamic lesions.

In a study of a thousand cases of brain diseases which came to autopsy, Dr. A. B. Evarts found 31 cases of lesions of this organ, or 3%; of this number half were Civil War veterans. This is remarkable in that the admissions to the hospital from which she took her figures show only about one-fifth to be of this class. Evarts is inclined to attribute this to the tremendous emotional strain which these people must have undergone at a time when brother fought against brother and father against son. As she says: "Therefore, it does not seem at all unlikely that this awful emotion should have left the thalamus a vulnerable point at which a definite lesion might be expected when arteriosclerosis appeared in due course of time. Reasoning from this conclusion, then, we learn that we may expect to find, in the history of a patient suffering from the thalamic syndrome, some unusually severe and long-continued strain."

This is one of the medical oddities which has, perhaps, no obvious utilitarian value, but which impresses us with the delicate harmony which runs through all our knowledge. We are gradually coming to understand more of the intricate functionings of the brain itself. With the dawning of this knowledge it is borne in upon us that certain parts of the brain are associated with the lowest order of psychic functioning,—the pleasure-pain reaction. Leading upward in a delicately graded scale, are the parts associated with the higher functions, terminating in the realm of pure intellect. Not, of course, that we conceive of this organ as a complicated arrangement of parts, each one of which has to do with a distinct function; we must speak much more generally than that. But we are coming to associate certain parts of the brain with definite evolutionary planes, and any such confirmatory evidence as the above, no matter how minute its weight, is welcome.

MEDICAL NOTES.

ACCIDENTS IN NEW YORK CITY.—Statistics of the number of killed and injured in accidents in New York City have recently been published.

"The total number, 23,300, does not include those reported in accidents but not injured, so

that the grand total of all persons in reported accidents in New York city in the year would rise above 29,000 persons.

Motor vehicles killed 283 persons in the streets of New York, passenger vehicles being responsible in 177 cases. Motor cycles killed no one, but contributed 377 accidents to a grand total of 6500 in which autos figured, the passenger ones striking nearly 5000 persons. Thirty-one hundred accidents were due to horse-drawn vehicles, and in these the passenger vehicles are responsible for only about 250. In fact bicycles in New York throw down more persons than pleasure carriages and hacks by about forty per cent, while the fatality record is the same for the two classes of vehicles, three persons each.

Railway accidents in the streets, to the number of 23, claimed 13 deaths, while street cars caused 1771 accidents with 77 deaths. Nearly 3000 persons were injured and 47 killed alighting from vehicles, while 300 were hurt and 9 killed stealing rides. There were 2400 collisions with 41 deaths and 420 runaways with 13 deaths. Aside from the street traffic there were 3000 falls with 24 fatalities and 580 persons hit by falling objects, one of whom was killed. Dog bites amounted to 120 in the year.

Another analysis of about 18,000 accidents places the responsibility. Way crossings of streets account for 3300 accidents,—a matter that is very plainly preventable,—while playing in the street figures 1200 more. Four hundred and seventeen individuals were injured while stealing a ride. Altogether the individual hurt was responsible in 8600 cases. The driver was at fault in 700 instances, with such matters as speeding, recklessness, wrong side of street and turning the corner improperly the major factors. There were 8 injuries on account of improper towing, preventable; 14 due to failure to signal, preventable; 31 for various items of disregard for the regulations, preventable; 36 by backing, preventable, and 20 by driving vehicle onto the sidewalk. There were nearly five hundred accidents due to defects in steering gear or other vehicular matters, all preventable, and 400 injuries through skidding."

EUROPEAN WAR NOTES.

BRITISH BIRTH RATE DURING THE WAR.—Report from London on February 3, notes among the civilian population of England an increase of death rate and decline of birth rate since the outbreak of the European War.

In the year in which the war began, there were 362,354 more births than deaths in England and Wales. In 1915 the excess of births over deaths was only 252,201. There were 64,569 fewer births and 45,584 more deaths in 1915 than in 1914.

IMPROVEMENT OF TEETH FROM WAR FOOD.—Report from Berlin on January 31 states that since the outbreak of the European War there

has been a notable improvement in the dental condition of school children on account of the elimination from their dietary of candy and soft foods and the use of war bread and other foods requiring more vigorous mastication.

WAR RELIEF FUNDS.—On February 10 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$258,582.40
French Wounded Fund	194,883.27
Armenian Fund	147,698.54
French Orphanage Fund	83,320.18
Surgical Dressings Fund	66,442.66
Polish Fund	60,791.78

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Feb. 3, 1917, the number of deaths reported was 307, against 278 for the same period last year, with a rate of 20.73, against 19.06 last year. There were 43 deaths under one year of age, against 47 last year, and 124 deaths over 60 years of age, against 100 last year.

The number of cases of principal reportable diseases were: diphtheria, 75; scarlet fever, 38; measles, 121; whooping cough, 6; typhoid fever, 3; tuberculosis, 37.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 5; typhoid fever, 3; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 5; whooping cough, 1; tuberculosis, 22.

Included in the above were the following deaths of non-residents: diphtheria, 1; tuberculosis, 1; whooping cough, 1.

Miscellany.

WASHINGTON CONFERENCE ON SOCIAL INSURANCE.

FROM December 1 to 9, 1916, there was held at Washington, D. C., a conference on social insurance summoned by the International Association of Industrial Accident Boards and Commission. The secretary of this organization is Dr. Royal Meeker, chief of the United States Bureau of Labor Statistics, who has been the moving spirit in the establishment of the conference. The president of the Association is Mr. Dudley M. Holman of Boston, formerly chairman of the Massachusetts Industrial Accident Board.

At this conference were representatives from nearly every state in the Union, so that its meeting becomes a matter of national scope. It was intended as a clearing house for an exchange of views and for discussion between those concerned with the many complex problems involved in the entire subject of social legislation. The proceedings of the conference are to be published by the United States Government.

Before the various sessions of the conference a large number of papers were presented dealing with the merits and demerits of different forms of administration, with compensation schedules of war, lump sum settlements, basic principles of rate making, accident prevention in connection with workmen's compensation, medical services and hospital fees, physical examinations and medical supervision of employees, defects in existing laws, occupation diseases, health insurance, pension systems and old age, invalid, unemployment and savings bank insurance. Among the Massachusetts representatives who presented papers at the conference may be mentioned Mr. Dudley M. Holman, Dr. Richard C. Cabot, Dr. Frederic J. Cotton, Dr. Francis D. Donoghue and Dr. David L. Edsall of Boston and Dr. W. Irving Clark of Worcester.

At the session of December 6, Dr. Francis D. Donoghue, medical advisor of the Massachusetts Industrial Accident Board, emphasized the importance of adequate medical service as a leading feature of workmen's compensation, if not the most important feature of the compensation, for the living workman.

"In return for the waiting period, generally provided in compensation laws, where no monetary consideration is paid, provision is made for medical and hospital services and medicines when required. Since most cases in Massachusetts, as in other States, do not last long enough to be paid compensation in the form of money, we should scrutinize carefully any substitute for the best medical services that it is possible to offer. Further than this, with the administration of various laws, a better correlated system of treatment than the ones in vogue hitherto may be developed.

"A completely efficient hospital for the proper care, treatment, reëducation and readjustment by personal study of an injured employee has yet to be constructed and maintained. The charitable idea underlying the establishment of hospitals still prevails, and the appeal to the heart is much stronger in the case of the crippled child than it is in the case of the crippled adult, even though he has depending upon him a number of children who may become crippled by reason of lack of nutrition or the invasion of disease, if the bread winner of the family is partly or totally disabled from work for a considerable period.

"If it were possible, every injured workman

should be kept under medical supervision from the time he was injured until able to resume his work. Such supervision should not be of such type as to be unduly expensive, and if properly carried out would save much time to the worker as well as to the employer of labor. It would have the additional advantage that the injured man would be in contact with encouragement and sympathetic treatment; when left to his own devices, he might not make his best effort, or he might not make his best effort at the opportune time. Early return to work is greatly helped by the assurance given by the doctor that it is safe."

Dr. W. Irving Clark of Worcester described the health department maintained by a large industrial plant at an annual cost of \$3.00 per capita providing periodic physical examination and constant supervision for its workmen. He emphasized the following points in the significance of such a measure.

"It means contented workers who realize that the factory takes a personal interest in their health and well-being.

"It means a reduction of sickness in the community.

"It means a minimum of permanent disability and rapid return to work after accident.

"It means a quick prevention of the spread of contagious disease.

"It means better and more hygienic working conditions.

"It means a reduction and prevention of occupational disease.

"It means a constantly increasing knowledge by workers of simple rules of health and prevention of disease.

"If universally adopted, it would mean a physically and mentally better country. The sinews of production ever strengthened and guarded, the factory would cease to be considered a consumer of human lives, but would be considered rather as an educator and supervisor of health.

"Preparedness is the watchword of the day. Can we better prepare for our industrial future than by urging the medical supervision of factory employees?"

Mr. Dudley M. Holman, in his presidential address, dealt in part as follows with the economic waste involved in industrial accidents.

"It is a very conservative estimate to state that annually 250,000 workers are permanently thrown out of employment through accident or preventable disease in the United States alone. These men and women must be supported somehow. Part of them receive whole or partial support under the provisions of the workingmen's compensation act, and, while this solves in whole or in part their individual problem of existence, it does so in most States only for a

limited period, and after six to ten years of idleness, when their compensation ceases, they are left in a most pitiable condition.

"Yet there is hardly one of these men and women who could not be put back into industry and a place found for them where they could support themselves, in part, at least.

"This economic waste caused by the apparently enforced idleness of this vast army of men and women exceeds \$100,000,000 a year of added burden, and amounts to not less than a billion dollars annually, a figure that is constantly being increased by the addition of a quarter of a million cripples each year.

"Much of this burden is primarily borne by the insurance companies, but they pass it along so that in the end the burden falls on society in general. This waste is a by-product of industrial inefficiency, for by prevention of accidents and disease seventy-five per cent. of these men and women would never become disabled."

At the session of December 7, Professor Willard C. Fisher, of New York University, outlined some of the defects in the workingmen's compensation laws now in force in thirty-four States of the Union, and suggested certain desirable changes.

"The wide and rapid spread of compensation legislation in all quarters of the world often has been cited as proof of a universal approval of the principles upon which it rests. In particular, we in the United States have declared with something of pride and joy that within the brief space of five or six years compensation laws have been enacted for two-thirds of the states, containing three-fourths of our population and industry.

"But it would be a gross error to suppose that three-fourths of our employees, or anything like so many, are covered by our compensation laws—that three-fourths of those injured at their employment within the United States stand to receive what we euphemistically call compensation. This moment is not the time to decide, nor even to ask, whether American compensation statutes have been enacted with satisfactory rapidity of succession or whether their provisions are reasonably adequate to the need. But we cannot be too prompt in ridding our minds of any belief that three-fourths of the American wage-earners who are disabled at their tasks are entitled to payments on account of their injuries and losses. But a small percentage of those who are disabled by industrial accidents, even within the so-called compensation States, can secure any indemnities whatever under the compensation laws. The great majority either are not affected in the least by the laws, have only the poor privilege of suing their employers with somewhat better prospects of winning damages, or have more or less adequate medical care at the employer's expense, with no possibility of securing either

indemnities for lost earnings or payments on account of pains and suffering.

"The reasons for the narrowly limited practical beneficence of the American compensation statutes are several. In most of the States the acts do not apply at all to certain employments, even to some of the most important. In only a quarter of the States is compensation compulsory by simple virtue of the statutes and without regard to the wishes of employer or employee. In nearly all no compensations are payable except for disabilities continuing through and beyond a specified 'waiting period,' which commonly is two weeks. And in quite all of the States certain disabilities are denied compensation for one or another reason connected with their origins, characters, or consequences.

"The two classes of employees who are most widely denied the benefits of compensation are agricultural laborers and domestic servants. By omission from the enumerated lists, by specific exclusions in direct terms, by the numerical exemptions, or by the exclusion of those not employed for profit, these two classes are cut out nearly everywhere. Only in New Jersey are domestic servants covered equally with other employees; in Connecticut they are covered where five or more may be in common service. Nowhere else in the United States are they affected by either compulsory or optional statutes. Agricultural laborers are but little better off. Only in New Jersey and Hawaii are they covered equally with other employees. In Wisconsin they are covered where they work four or more together; in Connecticut and Ohio, where they work five or more for the same employer; while in Vermont, they are covered wherever at least eleven may be working regularly for the same employer. In these two classes there cannot be less than 3,000,000 employees within the so-called compensation States who are wholly deprived of the compensation benefits which most other employees are granted.

"But it is the waiting period which cuts off much the greatest number of injured workmen from the benefits of the compensation laws. The returns from the different States are not closely comparable, but, taken all together, they support the generalization that the most common waiting period, two weeks, prevents from half to two-thirds of those who are disabled by their injuries from having any compensation. Percentages of those disabled by their injuries and recovering within two weeks have been reported as follows: Massachusetts, 1913-14, 63; Wisconsin, 1914-15, 72; Ohio, Jan. 1, 1914-June 30, 1915, 70; Washington, 1915, 42; 10,000 iron and steel workers reported by United States Bureau of Labor Statistics, 60. As to the general desirability of saving the injured workman and his family every unnecessary loss of income through injury and suspension of wages, there can be no doubt whatever. The Federal census of 1910 showed adult male wage earners in manufacturing industry

generally receiving less than \$600 a year; and Mr. I. M. Rubinow's study of real wages through 1912 shows a marked decline in the latest of his years. It is not improbable that the recent great rise of prices has made it harder than before for the average American employee to take care of himself and his family. Under such conditions every suspension of earnings, even for one week, is likely to be a genuine hardship for the workman and his dependents."

It was not the intention of the Conference to adopt resolutions relating to particular policies or methods. It is clearly realized that much time and consideration are needed to work out the best, and that what is the best for one State or section may not be best for another. The real purpose of the Conference was clearly to define the various problems demanding solution at the hands of legislators.

WORKMEN'S COMPENSATION IN THE UNITED STATES.

MR. F. M. WILLIAMS, Chairman of the Workmen's Compensation Commission of Connecticut, in a paper on Medical Services and Medical and Hospital Fees under Workmen's Compensation, read at the meeting of the Conference on Social Insurance called by the International Association of Industrial Accident Boards and Commissions at Washington, on December 6, 1916, presented the following as an appendix to his paper:

APPENDIX.

IN this appendix there are collected together the several compensation laws now in force, with the official description of each act, the place where it can be found, and a brief outline of its provisions as to medical, surgical, and hospital services.

1. FEDERAL ACT.—Becoming effective September, 1916. House resolution 15316, Sixty-fourth Congress, section 9: Government must furnish to the injured employee reasonable medical, surgical, and hospital services and supplies, without limit as to time or amount, and if necessary, transportation of injured employee to the place where he can be properly treated.

The States and Territories having statutes on this subject are arranged alphabetically.

2. ALASKA.—Effective July 28, 1915. Chapter 71, Laws of 1915, section 16: In fatal cases where deceased left no dependents, funeral expenses not to exceed \$150 and other expenses, if any, arising after injury and before death not to exceed further sum of \$150.

3. ARIZONA.—Effective October 1, 1913. Title 14, chapter 7, Revised Statutes of 1913 originally enacted as chapter 14, Laws of 1912, special session, codified by chapter 7 Senate bill No. 70, fourth session, Laws of 1913, section 3170 (3): Reasonable expenses for medical attendance and burial in fatal cases where deceased leaves no dependents.

4. CALIFORNIA.—Effective as amended August 7, 1915. Chapter 176, Laws of 1913, as amended by chapters 541, 607, 662, Laws of 1915, section 15: A reasonable medical, surgical, and hospital treatment, including nursing, supplies, and apparatus for a

period of 90 days, with provision that the time may be extended in the discretion of the commission. Reasonable burial fee, not over \$100.

5. COLORADO.—Effective August 1, 1915. Senate bill 99, session of 1915, sections 50 and 52: Medical, surgical, and hospital treatment, medicines and apparatus as may be reasonably needed, but not to exceed 30 days or \$100 in value. Burial fee for fatal cases where no dependents, not exceeding \$100. Special provision in case of hernia for special operating fee, not to exceed \$50.

6. CONNECTICUT.—Chapter 138, Public acts of 1913, as amended by chapter 258, public acts of 1915, effective May 20, 1915, part B, section 7: Medical and surgical aid and hospital services as the injury requires, without limit as to time and amount. Section 9 provides in fatal cases for burial fee, \$100. There is also the usual provision that the commissioner having jurisdiction may pass upon the reasonableness of medical and surgical bills.

7. HAWAII.—Effective July 1, 1915. Act 221, session of 1915, section 12: Medical and surgical services during first 14 days not exceeding \$50 in amount. Standard of living clause. Burial fee not to exceed \$100.

8. ILLINOIS.—Effective July 1, 1915. House bill 841, session of 1913, as amended by senate bill 66, session of 1915, section 8A: Necessary medical, surgical, and hospital services for a period not longer than eight weeks and not to exceed in amount the sum of \$200.

9. INDIANA.—Effective September 1, 1915. Chapter 106, Laws of 1915, section 25: Medical services during 30 days. Section 26: Containing standard of living clause. There is also a provision for not to exceed \$100 burial fee in fatal cases.

10. IOWA.—Title 12, Chapter 8A, Iowa code, 1913 supplement, section 2477 in 9 (b): Services during the first 14 days of incapacity, not exceeding \$100 in amount. Also in fatal cases expense of last sickness and burial not to exceed \$100.

11. KANSAS.—Chapter 218, Laws of 1911, as amended by chapter 216, Laws of 1913, section 11A. No provision for medical services except in fatal cases where the deceased leaves no dependents: reasonable expense of medical attendance and burial not exceeding \$100.

12. KENTUCKY.—Effective August 1, 1916. Senate bill 40, Laws of 1916, sections 4-6: Reasonable medical, surgical, and hospital treatment for not to exceed 90 days in time or \$100 in amount, with special provision in case of hernia operations. Standard of living clause.

13. LOUISIANA.—Effective as amended August 11, 1916. Act 20, session acts of 1914, as amended by act 243, session acts of 1916, section 8 (4): Reasonable medical, surgical, and hospital services, unlimited as to time, not to exceed \$150 in value and in fatal cases reasonable expense of last sickness and burial not to exceed \$100.

14. MAINE.—Effective January 1, 1916. Chapter 295, Laws of 1915, section 10: Reasonable medical and hospital services during the first two weeks, not to exceed \$30 except in cases of major surgical operations, with special provision in fatal cases where there are no dependents for expenses of last sickness and burial not exceeding \$200.

15. MARYLAND.—Effective 1916 with amendments. Article 101, Annotated Code of Maryland, volume 3, Bagby's edition, section 37: Such medical and surgical services, etc., as required by the commission—unlimited as to time—not to exceed \$150 in amount. Further provision for funeral expenses in fatal cases where deceased left no dependents unless he left sufficient estate to bury him.

16. MASSACHUSETTS.—Chapter 751, acts of 1911, as amended by chapters 172 and 571, acts of 1912; chapters 445, 448, 696, and 746, acts of 1913; chapters 238 and 708, acts of 1914; and chapters 123, 275, and 314, acts of 1915, part 2, section 5: Reasonable medical and hospital services during first two weeks

after injury or incapacity, with further provision that in fatal cases where there are no dependents reasonable expenses of last sickness and burial, not to exceed \$200, shall be paid.

17. MICHIGAN.—Effective as revised August, 1915. Act 10, public acts of 1912; first extra session as amended by acts 50, 79, 156, and 259; public acts of 1913, and by House bills 298, 342, 345, and Senate bill 268, public acts of 1915, part 2, section 4: Reasonable medical and hospital services during first three weeks after injury. If no dependents, reasonable expense of last sickness and burial, not to exceed \$200.

18. MINNESOTA.—Effective as amended April 20 and July 1, 1915. Chapter 467, Laws of 1913, as amended by chapters 193 and 209, Laws of 1915, section 18: Medical and surgical treatment, etc., for not to exceed 90 days in time or \$100 in value, with special provision that board may order such services for not to exceed 100 days in time or \$200 in value. Standard of living clause. In fatal cases burial fee and last sickness, not to exceed \$100.

19. MONTANA.—Effective July 1, 1915. Senate bill 157, section 14A-14F: Various provisions for mutual contracts as to hospital benefits, etc., subject to supervision of the board. General provision, section 16F, medical and hospital services during first two weeks not to exceed \$50 in value, and in fatal cases burial fee not to exceed \$75.

20. NEBRASKA.—Passed at session of 1913, effective by referendum vote, December 1, 1914, senate file No. 1, section 20: Medical and hospital services during 21 days after injury, not to exceed \$200 in value. In fatal cases, reasonable expenses of last sickness and burial not to exceed \$100.

21. NEW HAMPSHIRE.—Effective January 1, 1912. Chapter 103, laws of 1911, section 6, subdivision (1c): No provision for medical and surgical aid except in fatal cases where deceased leaves no dependents, in which event medical attendance and burial not to exceed \$100.

22. NEW JERSEY.—Chapter 95, laws of 1911, as amended by chapter 174, laws of 1913; and chapter 244, laws of 1914, section 14: Medical and hospital services during the first two weeks after injury not to exceed \$50 in value. Expense of last sickness and burial in fatal cases not to exceed \$100.

23. NEVADA.—Chapter 111, laws of 1913, as amended by chapter 190, laws of 1915, section 21C: Reasonable medical, surgical, and hospital aid as may be required not to exceed four months, with provision for medical and hospital agreements and assessments. In all fatal cases burial expense not to exceed \$125.

24. NEW YORK.—Chapter 816, laws of 1913, as reenacted by chapter 41, laws of 1914, and amended by chapter 316, laws of 1914; and further amended by chapters 167, 168, 615, and 674, laws of 1915, section 13: Medical and surgical services and attendance during 60 days after injury with standard of living clause. In fatal cases reasonable funeral expense not to exceed \$100.

25. OHIO.—Senate bill 137, acts of 1913, as amended by senate bill 296, acts 1913, and amended by Senate bill 28, acts of 1914, section numbers given are the section numbers of the Ohio Code; sections 1465 to 1489: Medical and hospital services in discretion of commission, unlimited as to time, and not to exceed \$200 in amount. In fatal cases reasonable funeral expenses not to exceed \$150.

26. OKLAHOMA.—Effective September 1, 1915. House bill No. 106, laws of 1915, article 2, section 4: Necessary medical, surgical, and hospital services during 15 days after injury. Standard of living clause. This statute does not apply to death cases.

27. OREGON.—Chapter 112, laws of 1913, as amended by chapter 271, laws of 1915, section 23: Medical and surgical attendance with hospital accommodations and transportation if necessary in the discretion of the commission, unlimited as to the time, limited to \$250 in amount. In fatal cases burial expense not to exceed \$100.

28. PENNSYLVANIA.—Effective January 1, 1916. Act 338, Laws of 1915, section 306 E: Reasonable surgical, medical, and hospital expenses limited to 14 days and \$25, unless major surgical operation is required, in which event cost not to exceed \$75. In fatal cases reasonable expenses of last sickness and burial not to exceed \$100.

29. RHODE ISLAND.—Effective as amended July 1, 1915. Chapter 831, Laws of 1912, amended by chapters 936 and 937, Laws of 1913, and chapter 1268, Laws of 1915, article 2, section 5: Reasonable medical and hospital services during first two weeks after injury; in case of death without dependents expense of last sickness and burial not to exceed \$200.

30. TEXAS.—Effective September 1, 1913. Part 1, section 7: Reasonable medical aid and hospital services, etc., during first week of injury. In fatal cases where deceased leaves no dependents or creditors expense of last sickness and funeral expenses not to exceed \$100.

31. VERMONT.—Effective July 1, 1915. Chapter 164, Laws of 1915, section 14: Reasonable surgical, medical, and hospital services during the first fourteen days not exceeding \$75. Standard of living clause. In fatal cases burial expense not to exceed \$75.00.

32. WASHINGTON.—Chapter 74, Laws of 1911, as amended by chapter 148, Laws of 1913, and chapter 188, Laws of 1915: No provision for medical and surgical aid. Burial expenses not to exceed \$75.

33. WEST VIRGINIA.—Chapter 10, Laws of 1913, as amended by chapter 9, regular session of 1915, and chapter 1, extra session of 1915, sections 27 and 54: Reasonable medical, surgical, and hospital treatment in discretion of commission. Unlimited as to time, limited in amount to \$150, with provision for funeral expenses in fatal cases not to exceed \$75. Special provision that if operation and further treatment are necessary, not to exceed \$300 may be ordered.

34. WISCONSIN.—Chapter 50, Laws of 1911, re-enacted by chapter 599, Laws of 1913, amended by chapters 121, 241, 316 and 369, 378, 462, and 582, Laws of 1915, sections 2394 to 2399 (1): Reasonable medical, surgical, and hospital treatment, etc., not to exceed 90 days. In fatal cases where no dependents reasonable burial fees not to exceed \$100.

35. WYOMING.—Effective April 1, 1915. Chapter 124, Laws of 1915: This statute contains no direct provision as to who must pay for medical treatment, but provides in section 20 for forfeiture by injured employees who refuse to submit to reasonable medical treatment and in fatal cases for burial fee not to exceed \$50.

Lest the impression go abroad that there is intention on the part of the sponsors of the bill to establish a 30 cent standard for payment of medical services, it is necessary to state that there are very serious statistical limitations to any such computation as has been made by Dr. Whitehill. To begin with, no one knows whether there are 9 or 6 days of loss of time through sickness per wage-worker in Massachusetts. Nothing but experience will demonstrate that—since the average varies between 5 and 10 days in Europe.

Another assumption is made by Dr. Whitehill that 1,000,000 workers must claim an additional 2,000,000 members of family, making a total of 3,000,000 under the law. The total population of Massachusetts on July 1, 1910, is estimated by the U. S. Census as 3,719,156. In 1910 the total population of the State was 3,366,416, so that during the 6 years the increase was about 10%.

The total number of persons with gainful occupations in 1910 was 1,531,068, which in 1911, on an assumption of an increase of 10%, was probably increased to some 1,684,000. Since only 1,000,000 wage-workers are to come under the law, or less than 60%, the total number of persons under the law is not likely to exceed 60% of the population or less than 2,250,000.

Even assuming that the estimate of \$8,000,000 as the total amount or remuneration for the medical work under the law is accurate, the only safe computation is that it would amount to over \$3.50 per capita, or \$8.00 per insured wage-worker. But how much work does that represent?

According to the experience of the Leipzig fund, each insured person, on an average, requires for himself:—

- 5.0 visits to the doctor's office
- .6 visits of the doctor to patient's home

And the amount of medical service for the members of the family, amounted *per insured*, on an average, to:—

- 2.3 visits to doctor's office
- 1.3 visits to patient's home

Or taken together the amount of medical aid to be performed for each insured would be 7 1-3 office visits and less than 2 home visits. Eight dollars for that amount of work may be insufficient. It will be for the insurance funds, the state, and the medical profession to agree upon a more equitable basis of compensation; but surely even the basis suggested is far from leading to "30 cents per day."

I. M. RUBINOW, M.D.

Correspondence.

INDUSTRIAL HEALTH INSURANCE.

131 East 23d Street, New York City,
February 7, 1917.

Mr. Editor:—

On the editorial page of the *Boston Herald* for Sunday, February 4, 1917, there appears a communication from G. E. Whitehill, M.D. concerning the "Medical Provisions of the Young Bill," which contains the following statement:—

"Social uplift writers are generally agreed that nine days' sickness is a conservative average for the general population and that the poorer paid workers do not receive the needed medical attention at present. Massachusetts can therefore expect at least 27,000,000 days' sickness from the 3,000,000 included under this bill. The advocates of this bill propose to pay \$8,000,000 for the medical care of the 27,000,000 days' sickness, less than 30 cents for each day's sickness."

THE YOUNG BILL.

Boston, February 1, 1917.

Mr. Editor:—

The Young bill is no improvement on its predecessor. It throws out a sop to the general practitioner by means of its "freedom of choice" clause, and hence admits the necessity of making concessions. Concession is always a sign of inherent weakness. The weakness of compulsory health insurance, as its proponents are fully aware, in my opinion, lies not in methods, but in the principle.

If they can talk methods loud and long enough, the error of the principle may be overlooked. The assurance with which they speak of putting compulsory health insurance into operation in California this year, in Illinois the next, and in Massachusetts three years from now, would make me give pause to the following sentence did I not feel that I am supported by the fundamental law of the land.

Over my signature, I believe I was the first to raise the question of the constitutionality of this proposed legislation, and I now venture the prediction that not this year, nor next, nor any year will see it in operation, unless the Constitution of the United States un-

dergoes a change. Standing in support of this view are the recorded opinions of the American Federation of Labor, its Mass. State branch, the National Civic League, an ex-candidate for Governor of Massachusetts (himself an ultra-Progressive, who favors the legislation, but recognizes its unconstitutionality), the New York Society of Medical Jurisprudence, and finally the Insurance Economic Society. All agree that compulsion is indefensible under the Constitution. The Supreme Court of Massachusetts in its decision on the Workmen's Compensation Act, leaves little doubt as to what its attitude would be toward a compulsory bill. For these reasons I believe the whole question to be an academic one.

The Young bill reeks with class legislation. Here is an example. Part 2, Section 6, No. 1, allows the carrier freedom of choice in his selection of the genus, physician and surgeon. Part 2, Section 8, orders the carrier to go to the species, specialist, with whom the Funds have made special arrangement. Notice the distinction; freedom for the genus; restriction for the species. If this idea prevailed it would be perfectly possible to order the larger part of my practice to forsake me and to go to one of my eminent colleagues.

Such trifling inconsistencies pervade the whole bill, which is the sum total of an effort to do by state control, what ought to be the product of private endeavor; which monstrosity is known as Socialism.

Yours truly,

JOHN J. HURLEY, M.D., F.A.C.S.

WORKINGMEN'S INSURANCE IN GERMANY.

Everett, Jan. 27, 1917.

Mr. Editor:—

If no one has anticipated me I would like to call the attention of your readers to a monograph entitled: *The Practical Results of Workmen's Insurance in Germany* by Dr. Ferdinand Friedensburg, for twenty years in the Imperial Insurance Office in Germany. This was first published in 1911, a translation was reviewed in the *New York Times*, July 9, 1911. In October, 1911, the Workmen's Compensation Service & Information Bureau of N. Y. City sent out many copies, which are now found in some if not all public libraries. This bureau has no copies on hand at present. Wm. Rodman Fay of Boston takes up the subject of this monograph in *The Boston Daily Advertiser*, Jan. 27, 1917. The Workmen's Bureau did not send out this monograph with the aim to oppose Workmen's Insurance, but to help throw light on the German system, which many claim is almost perfect. It is in no hostile spirit that I call attention to this very severe criticism of the workings of the German Accident Insurance System which is made by Dr. Friedensburg, as a friend of the system.

Dr. Friedensburg says, "The system is a *circulus vitiosus*. Charity, pauperism and fraud are the segments of the circle, and to those who do not see in their countrymen a mere mass, it is a deeply painful experience that the insurance has directly led to a general alienation and demoralization."

The friends of compulsory Health Insurance claim that his criticisms were not generally shared and that these criticisms applied specially to the Accident Insurance system and not to the Health Insurance System in Germany. This last is true but the same workmen, employers, and officials were also concerned in the system of Health Insurance, and medical men can appreciate Dr. Friedensburg's reference to "one of the melancholy consequences of our Workmen's Insurance is *pension hysteria*." This monograph shows what many already know, what humans will do when the door is left open to get something for nothing, or for less than cost at others' expense.

The monograph is well worth reading.

G. E. WHITEHILL, M.D.

SOCIETY NOTICES.

WORCESTER DISTRICT MEDICAL SOCIETY.—The regular meeting will be held Wednesday, February 14, 1917, at 4.15 P.M. By invitation of Dr. James V. May, the meeting will be held at the Worcester Department of the Grafton State Hospital (Summer Street).

PROGRAM.

I. A Demonstration of the Intravenous Salvarsan Treatment will be given in the operating room from 3.00 to 4.15 P.M. Some of the Laboratory Methods of Diagnosing Syphilis will also be shown.

II. Paper by Dr. D. A. Thom: "Syphilis of the Nervous System and Its Treatment."

III. Presentation of Cases by Drs. Hiram L. Horsman and D. A. Thom.

ERNEST L. HUNT, M.D., *Secretary*.

SUFFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Surgical Section will be held on Wednesday evening, February 14, 1917, at 8.15 P.M., at the Medical Library. The general subject of the evening will be Lung Surgery.

The Surgical Treatment of Bronchiectasis and Advanced Pulmonary Tuberculosis: Dr. Willy Meyer, Professor of Surgery in the New York Post Graduate Medical School and Hospital.

Discussion by:

Dr. Frederick T. Lord
Dr. John B. Hawes
Dr. G. M. Balboni
Dr. George W. Holmes
Dr. Samuel Robinson
Dr. C. L. Scudder

W. J. MIXTER, M.D., *Secretary*.
CHARLES L. SCUDDER, M.D., *Chairman*.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-seventh meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, February 23, 1917, at 8.15 P.M. The following papers will be read:

1. Certain Aspects of Epilepsy in Children, George Clymer, M.D., Boston.
2. Hemorrhagic Conditions, with Especial Reference to Purpura, George R. Minot, M.D., Boston.
3. Iliac Adenitis and Abscess, Discussion opened by Beth Vincent, M.D., Boston. Charles J. Mixter, M.D., Boston.
4. General discussion of Health Insurance.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*.
RICHARD M. SMITH, M.D., *Secretary*.

NOTICE

BOSTON CITY HOSPITAL.—On and after Monday, February 12, 1917, the Out-Patient Department for Diseases of the Nervous System will be open daily from 9 to 11 A.M., instead of on Mondays, Wednesdays and Fridays as heretofore.

In view of the urgent need in our large cities for special clinics where patients with mental disease, who do not care to go to hospitals for the insane, may receive careful examination and expert advice and treatment, and in view also of the fact that the number of such patients who now come to the Out-Patient Department is steadily increasing, the physicians to the Department have decided that, for the present, Tuesdays and Saturdays shall be especially, although not exclusively, devoted to the examination of patients with mental disorder.

J. J. DOWLING, M.D.,
Superintendent.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

February 22, 1917

NEW ENGLAND SURGICAL SOCIETY

HYPERTROPHIC ILEO-CAECAL TUBERCULOSIS. By Homer Gage, M.D. Worcester, Mass., and Ernest L. Hunt, M.D., Worcester, Mass.	259
RIGHT COLECTOMY, WITH SPECIAL REFERENCE TO THE END RESULTS OF A SERIES OF TWELVE CASES. By Peet P. Johnson, M.D., F.A.C.S., Beverly, Mass.	266
THE ADVANTAGES OF CONSERVATIVE SURGERY IN OPERATIONS FOR DIVERTICULITIS OF THE DESCENDING AND PELVIC COLON. By John W. Keeffe, M.D., LL.D., F.A.C.S., Providence, R. I.	271
RESECTION OF THE DESCENDING COLON AND RECTUM. By Frank H. Lahry, M.D., Boston.	275
GENERAL DISCUSSION.	278

BOOK REVIEWS

Obstetrics. By Edward Bradford Cragin, M.D.	279
Bone and Joint Studies. By Leonard W. Ely and John Francis Cowan.	279

EDITORIALS

THE PROTEST AGAINST INDUSTRIAL HEALTH INSURANCE.	250
LEGISLATION FOR CONTROL OF TUBERCULOSIS.	251
THE INSTRUCTIVE DISTRICT NURSING ASSOCIATION.	252
PREPARATION FOR WAR.	253
MEDICAL NOTES.	254

THE MASSACHUSETTS MEDICAL SOCIETY

STATED MEETING OF THE COUNCIL.	255
BERKSHIRE DISTRICT: BOYLAN MEMORIAL HOSPITAL.	290

CORRESPONDENCE

INDUSTRIAL HEALTH INSURANCE: A PROTEST. W. A. Dolan, M.D.	291
INDUSTRIAL HEALTH INSURANCE: A REJOINDER. George E. Whitehill, M.D.	292

MISCELLANY

NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.	292
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New England Surgical Society.

HYPERTROPHIC ILEO-CAECAL TUBERCULOSIS.

BY HOMER GAGE, M.D., AND ERNEST L. HUNT, M.D., WORCESTER, MASS.

AMONG the interesting surgical problems connected with the tubercular infections, none is more important or more interesting than those which arise from the tubercular infections of the right lower quadrant of the abdomen.

The appendix, the mesenteric glands of the ileo-caecal angle, and the caecum may each by itself, or in any combination with the others, be the seat of invasion. Even in general tubercular peritonitis and in the widespread enteric forms of tuberculosis, the manifestations in this region are apt to be more extensive and more advanced than elsewhere.

But independently of these more general forms, each of these three structures may be found to be the seat of a purely localized process, even though no other active foci are apparent, a condition comparable to the tubercular glands of the neck and the tubercular processes in the bones.

It is to such a process, affecting the caecum and the region of the ileo-caecal valve, that we venture to ask your attention for a few moments: Its existence had attracted little attention until within the last 25 years, "although a localized tubercular deposit causing thickening of the coats of the caecum" had been pointed

out as long ago as 1849, and Czerny in Germany and Durante in Italy had made a few excisions of tubercular caeca.

The interest in ileo-caecal tuberculosis began in 1891 with the announcement from Billroth in Vienna and Hartmann and Pilliet in Paris, that what had often passed as cancer of the caecum was really tuberculosis,—not malignant at all, but equally capable of excision, with a better prospect of permanent relief.

Hartmann's classification still stands, viz., an ulcerative and a hypertrophic form. In the first or ulcerative form, in Hartmann's own words, "the whole of the ileo-caecal region is lost in a mass of adhesions, interspersed with caseous matter, and even purulent tuberculous cavities, communicating sometimes with the intestinal tract." It is not capable of radical removal, but may often be relieved by incision and drainage, or by exclusion through anastomosis.

The second or hypertrophic form is the so-called tubercular tumor of the caecum, in which "the caecum appears externally increased in volume, more or less mobile in the iliac fossa, and often included in a fibro-adipose mass which attains a thickness of 3-4 c. m." It is of much surgical interest because it is so easily mistaken for cancer, and because it is so readily and satisfactorily amenable to surgical intervention.

It is not very common, although since attention was drawn to it, in 1891, upwards of 300 cases have been reported. Yet Wiener in his article on Ileo-Caecal Tuberculosis in the *Annals of Surgery* for May, 1914, said that he was

"unable to find a single monograph by either an English or an American surgeon on this topic."

In 1903, in a paper on the Surgical Aspect of Cancer of the Intestine, we reported the case of a young woman, 30 years old, from whom was removed a tumor of the caecum, sections from which showed the intestinal wall to be about four times its normal thickness, and to be infiltrated with an adeno-carcinoma.

The description of the specimen, a review of the clinical history, and the fact that she was alive and well six years later, suggest very strongly that we fell into the error which Hartmann says is so easy, and were really dealing with a hypertrophic tubercular tumor of the caecum, and not with malignant disease.

Within the last three years we have, however, met with two typical illustrations of the hypertrophic form of ileo-caecal tuberculosis, which are, we hope, worth a brief consideration:

CASE I. Mary S. W. C. H. Admitted Oct. 18, 1913. Syrian, 15 years old. Parents both well. Was in hospital two years ago, having been referred from the out-patient department with a diagnosis of tubercular peritonitis, which was not confirmed in the house, "no diagnosis" being entered on the record. The record contains the following pertinent note,—"Lungs negative save for suggestion of dry rûbs at right base, no dulness." "Abdomen,—slight tenderness on deep pressure all over, especially right iliac fossa."

Since that time has suffered from severe pain in the right inguinal region, and has noticed a hard, tender mass in the right hypochondrium which has increased in size during the past two months. She has lost weight, is troubled much by night sweats and feels weak all the time. She has never menstruated.

Physical Examination.

Fairly nourished, but poorly developed girl. Chest: Lungs are resonant throughout—breathing somewhat harsh over right apex, and there are a few fine moist râles throughout both lungs. Vocal and tactile fremitus normal. Heart negative. Abdomen: a hard mass is palpable in the right hypochondriac region, which moves up and down with respiration, not definite in outline, and is very tender. There is marked spasm of the right rectus. Extremities negative. Urine 1014, no albumen, no sugar. Operation on the 21st by Dr. Gage.

Right rectus incision. Small intestine and appendix apparently normal, but caecum and lower part of ascending colon were thickened and formed a somewhat cylindrical mass of greater consistency than normal, but freely movable. The lymphatic glands in the ileo-caecal angle were somewhat enlarged. It being evident that obstructive constriction was imminent, the appendix, the caecum and the ileo-caecal glands were removed, the ends of ileum and colon closed, and a lateral anastomosis established between ileum and ascending colon.

Convalescence was uneventful, the wound healing by first intention. Discharged relieved on the 19th day after the operation. Sept. 11th, 1914, patient returned to the hospital for observation, and is recorded as "well developed and nourished; gener-

al appearance much better than one year ago; has gained in weight and height a good deal since discharge from the hospital; eats well, no pain or tenderness. Moderate enlargement of cervical and inguinal lymph nodes." Heart and lungs were normal, and abdomen showed "no masses or tenderness." "General condition very good."

X-ray study by the bismuth injection method was thus reported by Dr. P. H. Cook: "Intestine normal from rectum to splenic flexure, thence transverse colon turns obliquely downward to the approximate position of the hepatic flexure. The bowel is much curled on itself at this point, but portions of the ascending colon can be recognized. Bismuth has passed ileo-colonic junction."

Pathological Report.

Specimen (see Plate I, Fig. 1) consists of the caecum, 3 cm. of ileum, appendix and a few small lymphatic glands. The walls of the caecum are somewhat irregularly, but very markedly thickened and increased in density. The lumen is contracted, is irregular in calibre, varying between 5 and 12 m.m. in diameter. The surface is partly covered with smooth serosa, but for the most part presents irregular masses of fat, some of which resemble the normal appendices epiploicae, while much seems to be mesenteric fat attached to the caecal wall. Splitting the specimen longitudinally from front to back the lumen is exposed throughout and shows the mucosa to be rough and irregular, with small papillae projecting in places, while elsewhere there are areas which seem denuded of epithelium, are rough and covered with grayish sloughs. The cut edges show the thickness of the walls to vary between 4 and 15 m.m., the zone of greatest thickness being just above the ileo-caecal junction. Just above this ring of thickening is a thinned area in which a portion of the wall seems replaced by fatty areolar tissue. In general, however, the wall is firm, dense, of pearly gray color, with hemorrhagic points near and in the mucosa. The ileo-caecal opening is contracted to 4 m.m., but there is no apparent involvement of ileum beyond the caecal wall. The caput is relatively less affected than the wall of caecum lower down, but the entire process extends from the caput 9 cm. down the caecum terminating rather abruptly as a ring encircling the gut.

The appendix apparently is uninvolved. The lymphatics are small—5 to 8 m.m. in diameter, and on section are of uniform consistency and pinkish in color.

Microscopical Sections. (See Plate IV, Fig. 1.)

In these it is seen that the entire thickness of the caecal wall is greatly altered by the disease process. The changes are most severe in the mucosa and submucosa;—in muscularis and subserosa, while less destructive, they are distinct and characteristic. The mucosa presents varying degrees of departure from normal. In places the glands are pushed aside by small foci of round-cell aggregation in which are central spaces resembling germinal centers of lymph follicles; in other places several such areas seem combined, and the central parts are occupied by giant-cells with peripherally arranged nuclei, or necrotic spots, or both.

In other portions these accumulations give place to large areas, where but little can be made out but round-cell and polynuclear infiltration with pushing aside and upward of the glands by projecting

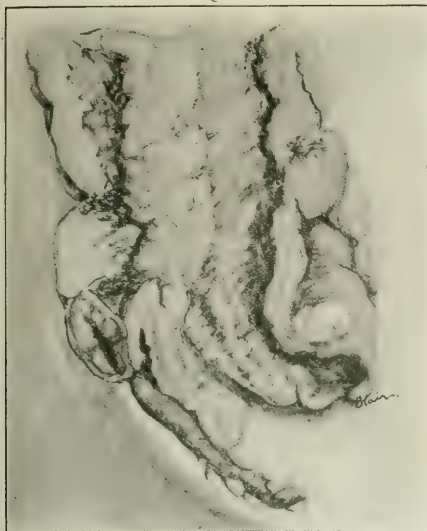


PLATE 1. FIG. 1. HYPERPLASTIC TUBERCULOSIS OF CAECUM.

CASE 1. M. S. Drawing of gross specimen, split through the middle, showing irregular thickening of wall and fatty overgrowth. About midway of the posterior wall is an area of loss of substance evidently a healed deep ulceration.



PLATE 1. FIG. 2.

CASE 2. L. A. H. Drawing of gross specimen showing general contraction of cecum with thickening of walls and fatty deposits.

processes of connective tissue, all showing frequent extravasation of red blood corpuscles. These cell accumulations are often necrotic within, and the mucous follicles are distorted, often stretched into cyst-like cavities or projected into the lumen as papillary or villous processes. In the most damaged places the infiltration extends through the underlying submucosa, the central part is necrotic and has sloughed away, leaving an ulceration walled with new-formed connective tissue densely infiltrated with round cells, polynuclear leucocytes, often hemorrhagic and containing scattered fragments of the mucous follicles.

The submucosa is the seat of other foci of round cell infiltration often with central giant cells. These are also found scattered in the muscularis and subserosa, which are both much infiltrated both in the neighborhood of the foci and diffusely, many polynuclears being present. There is marked increase of the connective tissue elements and capillaries. Here and there are interruptions in the continuity of the muscularis with replacement by connective and areas of fatty tissue, and the whole width of the section is narrowed. The appendix is not evidently involved. The mesenteric lymph nodes present numerous groups of cells of the so-called "epithelioid" type, occasionally with a central giant-cell. There is no breaking-down evident in any of the glands examined.

Diagnosis.—Tuberculosis of the caecum.

CASE 2. L. A. H. Admitted Nov. 17, 1914. Merchant, 71 years. Has suffered for years from attacks of cardiac asthma. One and one-half years ago began to be troubled by gas in abdomen, which was temporarily relieved by treatment. Five months ago an attack of "ptomaine poisoning" lasted a week, during which period it was found difficult to pass rectal tube.

Two months later had an attack of severe abdominal pain with nausea and great distress, and again difficulty in giving enemata was experienced. Another attack three weeks later. In October he noticed a soreness and a bunch in the right side of the abdomen. Had been seen and examined in Boston, where he had received a diagnosis like our own, of cancer of the caecum.

Physical Examination.

Well developed and fairly nourished, but rather pale. Pulse 90, temp. 97°, systolic blood pressure 130, diastolic 80. Tongue dry and coated—there are a few small, discrete lymph glands palpable in the neck. Chest: Heart area and sounds normal, regular. Lungs negative save for broncho-vesicular respiration and medium dry râles below angle of scapula in right back. Abdomen: Lax and soft, liver and spleen not palpable. There is a large, firm mobile mass palpable in the lower right quadrant with moderate tenderness on pressure, no muscle spasm. Extremities: knee-jerks present and equal, possible slight oedema of ankles,—no paralysis. Urine: Acid, 1024—no albumen, no sugar.

Operation.—Nov. 18, Dr. Gage. Gas-oxygen. Dr. Hunt.

Five-inch right rectus incision. Caecum found to be the seat of a firm tumor the size of the closed fist, suggestive of tuberculosis or cancer. Caecum with about two inches of ileum, the appendix, and five inches of colon removed with mesentery. Open ends of intestine closed, and a lateral anastomosis between ileum and transverse colon was then made.

Convalescence was complicated by severe and persistent vomiting during third and fourth week, and by suppurative right parotitis, which required opening on the forty-eighth day. Discharged relieved on the fifty-second day.

Sept. 26, 1916. Reports himself as in good health and able to attend daily to his large business. Has gained much in weight. Says he notices slight discomfort in right side of abdomen, and is subject to spells of mental depression which are relieved by saline cathartics. X-ray study by barium injection is thus reported by Dr. Cook: "Plate shows large intestine normal to about the middle of the transverse colon. Above this point the colon is dilated and terminates at the region of hepatic flexure in a blind end. Lower part of ileum is also shown, proving patency of anastomosis."

Pathological Report.

Specimen (see plate I, Fig. 2, and Plate II, Fig. 1) consists of the caecum, part of the ascending colon, appendix and 5 cm. of the ileum. The caecum and the ascending colon measure 15 cm. in length (after hardening), and the appendix 7 cm. in length, and 6 to 8 mm. in diameter. The caecum is represented by a firm mass, which also involves the ileum for 2 cm. Median section reveals extreme thickening and contraction of the walls of the caecum for a distance of 7 cm. from the caput caeci and 2 cm. into the ileum. In both it ends rather abruptly as an encircling ring of thickening developed chiefly toward the lumen, which is thereby reduced in caliber to 5 to 7 mm. in the caecum, and 3 to 4 mm. in the affected portion of the ileum. The ileo-caecal valve is obliterated as such, though it is not absolutely occluded. The mucosa beyond the lesion presents regular transverse rugae, which disappear as it mounts the ring of thickening, merging into a thin, irregularly ridged lining for the constricted portion, and showing little resemblance to a mucous membrane. The cut edges of the growth are 1 cm. thick above the ileo-caecal junction and 2 cm. in the caput. They are smooth and glistening and present quite well demarked layers, which from within outward are: (1) the pearly edge of the mucosa, 1 or 2 mm.; (2) a layer of radially striated firm tissue, 4 to 8 mm., and best developed in the caput; and (3) a layer of smooth whitish firm tissue, 3 to 6 mm. thick. Scattered through the layers, but most numerous in proximity to the lumen, are pin-head whitish nodules. The specimen is covered in places by smooth serous membrane, but for the most part, and especially about the caecal portion, there are shaggy pendants of fatty tissue, and in places this fatty structure seems to spring from deep in the substance of the growth. The caecal end of the ileum also exhibits a striated, pearly thickening 6 mm., and as nearly as can be calculated, involving only 2 to 2½ cm., and ending less abruptly than in the caecum. The appendix is 8 mm. in diameter and not apparently involved in the process.

Microscopical Sections. (See Plate II, Fig. 3 *et seq.*)

The histological picture varies somewhat in sections from different parts of the specimen. Those from the caecal wall, well below the ileo-caecal junction, show the mucosa to be the seat of foci consisting of a central giant cell surrounded by a loose structure of cells of "epithelioid" type, more or less necrotic according to size of lesion, the whole surrounded by a zone of lymphocyte infil-

tration which extends into the interglandular spaces, the tubules being pushed aside or upward. In places these foci are confluent and necrotic, the tubules being broken up, and are apparent as groups of swollen goblet cells scattered through the periphery of the focus. Where the continuity of the mucosa is interrupted by this process, the necrotic centers have evacuated, leaving deep depressions, which often extend into submucosa and have walls of necrotic tissue densely infiltrated with red blood corpuscles, poly- and mononuclear leucocytes, many of the polynuclears being of the eosinophilic type. Giant cells are frequent in the deeper portions of the inflammatory zone. The capillaries in the vicinity of the foci are injected, and there is more or less hemorrhage into the tissues near the more destructive lesions. The submucosa is the seat of many of these foci of giant cells, endothelial leucocytes and round cells on a supporting reticulum of fibroblastic origin, in many places lacking nuclei and showing other necrotic changes, of which some of the leucocytes partake. The adjacent connective tissue shows marked proliferative effort, both in the endothelium of the blood and lymph spaces and the fiber cells, with increase of the intercellular substance. The muscularis is much thickened and distorted by hemorrhagic and leucocytic invasion of the intermuscular stroma, and by foci similar to those above described, which traverse this layer in columns perpendicular to the lumen of the bowel, but with a tendency for the foci to remain discrete, with little necrosis. Reaching the subserosa, the foci spread longitudinally again. Here there is also marked increase in connective tissue and capillaries. The larger blood vessels are engorged and their walls thickened by increase in the adventitia. The serous coat is lacking in most sections, areas of adipose tissue, constituting the outer layer, for the most part.

In the sections from the caput the mucosa is destroyed as such, being represented by a few remnants of tubules supported by a new formed connective tissue rich in capillaries. There is no covering epithelium, the surface being necrotic fibrin and tissue, with a wall of polynuclear infiltration marking it from deeper portions. The other layers present foci like those described, but modified by relative absence of the leucocytic zone, shrinkage of the giant cells and surrounding reticulum, which is vacuolated. Everywhere in the affected portions of the different layers is seen new formed fibrous connective tissue, which predominates over the muscle tissue and separates its bundles.

In the sections from the affected part of the ileum the more active condition of invasion with necrosis and ulceration is found. The appendix presents marked increase in lymphoid elements, but otherwise seems unaffected.

Diagnosis—Hyperplastic tuberculosis of the caecum and lower end of ileum.

These cases of hypertrophic ileo-caecal tuberculosis appear to be equally common in male and female, and though usually found between the ages of 20 and 40, may occur at any age, as indicated in our two cases—and 71 is older than any case of which we have been able to obtain the record.

The pathological process as illustrated in Plate II, Fig. 3, *et seq.*, seems to be one of tubercular invasion by way of the mucus mem-

brane, with necrosis, ulceration and central discharge, but in which the conservative forces, as expressed by the production of limiting fibrous overgrowth, have largely gained the ascendancy. The evident destruction and repair to which the mucosa and submucosa have been subject together with the concentric narrowing of the lumen and longitudinal shrinkage suggest these structures to have been the first to suffer, while the columns of round-cell infiltration with frequent tubercles, with but little necrosis, which are scattered through the subserous layer, may be interpreted as more recent extensions of the process. The muscularis is much less affected than either the submucous or subserous layers, but is markedly thickened, apparently quite as much



PLATE II. FIG. 2.

CASE 2. L. A. H. Illustrates thickening at ileo-caecal junction. Sections from A show active tuberculosis.



PLATE II. FIG. 1. HYPERTROPHIC TUBERCULOSIS OF CAECUM.

Photograph of specimen from Case 2, split longitudinally and then diverging into ileum and into caecum. Note extension of growth into ascending colon at A.

by contraction of the viscus as by the inflammatory process. The extensive fatty deposits and even ingrowths are doubtless a part of the conservative effort, and supplement the more efficacious fibrous tissue which is formed in excess here, as it is in other parts of the body wherever it wages a strong fight against tuberculosis.

Unlike the entero-peritoneal type the hypertrophic form of caecal tuberculosis is rarely accompanied by other active foci of the disease; which favors the contention that it is a primary focus resulting from an infection by way of the intestinal contents, rather than by way of the blood or lymphatic channels.

Where ileo-caecal involvement occurs as a complication of pulmonary tuberculosis, the ulcerative entero-peritoneal type is found. That

these severe lesions should go with cases where the resistance is already overwhelmed by the ravages of the disease elsewhere is to be expected. So when we find a single lesion in a structure which, like the skin or the caecum, allows of the ready discharge and removal of necrotic material, it is logical to expect evidence of concentrated resistive effort with retardation of the destructive, and exaggeration of the repair processes; hence the indurative character of the lesion with which we are dealing, like that in lupus (Baum), or the "fibroid phthisis" of long-standing pulmonary tuberculosis.

The disease is the same, and the tissue reaction is the same, the difference being in degree and dependent on (1)—the strain or virulence of the infection; (2)—the individual's power of

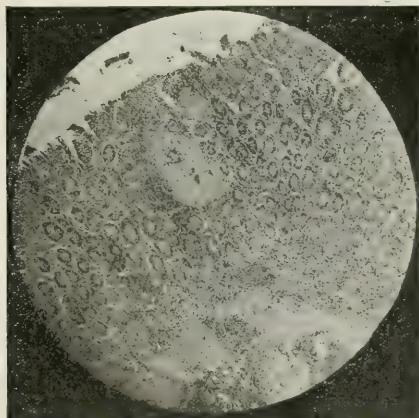


PLATE II. FIG. 3.

Photomicrograph under low power showing early invasion of mucosa by tubercle. From Case 2, near advancing edge of process in caecum.

resistance; (3)—the character of the viscus affected.

As affecting the caecum, while similar up to a certain point where the reaction of healing fails or becomes dominant, the resulting conditions differ distinctly both as to the pathological picture and the clinical manifestations,—the one, so-called entero-peritoneal type, progressing to perforation with peritonitis or abscess formation; the other so-called hypertrophic type to which our cases belong, progressing toward scar formation and mechanical interference with the function of the bowel by tumor formation and obstruction. Assuming the foregoing conception of the pathology to be correct, as the histological findings in our two cases indicate, the term "hypertrophic," while a convenient clinical designation, seems misapplied. True, there is an increase in bulk of the caecum, but on analysis we find that it is due not to "an increase in bulk of pre-existing normal parts" (Dunglison) but, on the contrary, there is an actual loss of mucosa, while the increase in bulk is due to infiltration by foreign cells with excessive proliferation or hyperplasia of fibrous cells from the connective tissue.

Without aspiring to a reputation for hair-splitting, we venture to suggest the designation "fibrous hyperplastic tuberculosis of the caecum" as more in keeping with the actual evidence of the histological picture.

Our sections from Case 2 reveal a different degree of activity in the distal portion from that in the caput and near the ileo-caecal junction; in the former, infiltration and necrosis are most prominent, while in the latter disappearance of inflammatory products with connective tissue overgrowth are most characteristic. In the small portion of ileum involved the more acute condition prevails. Thus it may be assumed that the original site of the disease is in the region of the caput, and the extension is downward, as held by Hartmann, and upward into ileum very slightly.

These cases present very considerable difficulties in diagnosis. The onset is slow, gradual and usually associated with vague indefinite pains in the right iliac fossa, and symptoms of intestinal indigestion. At this stage it is practically impossible to rule out a chronic appendicitis. When to these symptoms are added an increasing constipation, with attacks of colicky pain, and the discovery of a movable tumor, the probability of malignant disease with stricture is at once suggested.

At any period of the disease the possibility of tuberculosis of the ileo-caecal glands must not be overlooked. A family or personal history of tuberculosis should, of course, arouse the suspicion of the same lesion when trouble is suspected in the region of the caecum, but it is by no means always present, and its absence must not be emphasized too strongly in consideration of lesions in this vicinity.

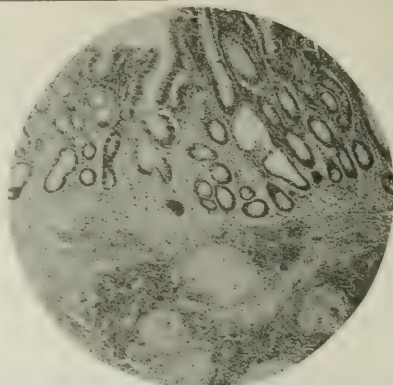


PLATE III. FIG. 1. TUBERCULOSIS OF CAECUM.
Mucosa comparatively normal. Submucosa the seat of many tubercles which are so grouped as to indicate lateral extension of the process.



PLATE III. FIG. 2.
Muscularis from same section showing tubercles in columns generally perpendicular to the plane of the caecal wall, indicating extension outward. Case 2.

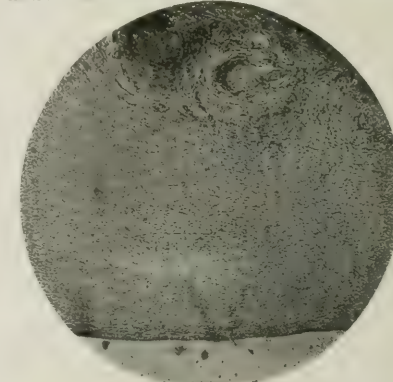


PLATE III. FIG. 3.
Subserosa from same section much thickened and containing tubercles which again spread laterally. Case 2.

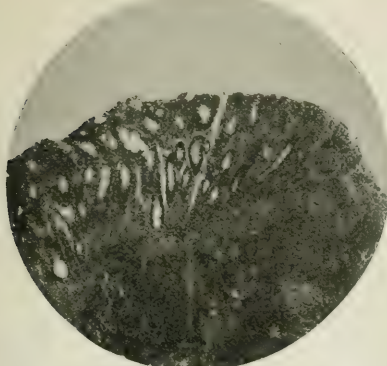


PLATE IV, FIG. 1.

Very low power. Section from Case 1. Necrosis and deep ulceration of mucosa.

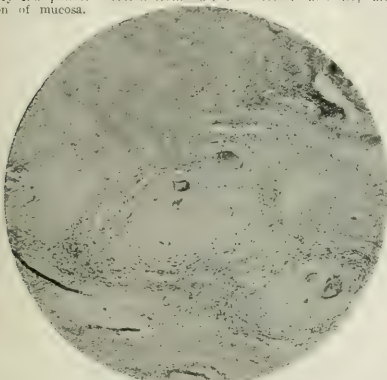


PLATE IV, FIG. 2.

Medium power. Section from Case 2 showing tubercles undergoing retrograde change. Round cells have largely disappeared, giant cells are shrunken and nuclei are fewer. Fibroblasts numerous.

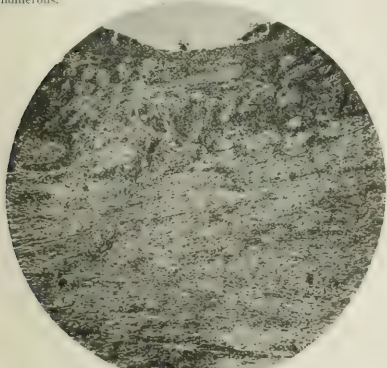


PLATE IV, FIG. 3.

Section from near ileo-caecal junction of specimen from Case 2. Mucosa largely destroyed and replaced by connective tissue. Surface covered by slough. Very few tubercles in deeper layers, which show marked fibrosis. Considerable polynuclear infiltration persists.

After the development of a palpable tumor which does not disappear with the subsidence of the pain, in a person below the cancerous age, a tuberculous process must always be thought of, and if the tumor is movable, the caecum rather than the mesenteric glands obviously would be its most probable location. Elevation of temperature and a high leucocyte count are usually wanting, whereas they may be expected in the ordinary inflammation of the appendix.

After middle life, in the cancerous age, it is probably impossible to distinguish beforehand between tuberculosis and cancer in the presence of a mobile tumor of the caecum with symptoms of increasing obstruction,—in fact, in the case of the man 71 years old, after viewing the tumor *in situ* and inspecting its gross appearances on section after removal, we still believed that it was malignant. It required the microscopical examination to convince us of our error.

On the other hand, in a case of tumor of the caecum recently operated on, the appearance of a necrotic area in the substance of the tumor led us to a diagnosis of tuberculosis, which had later to be changed to cancer by the findings of the microscope.

The main thing after all, and perhaps the only thing that we should insist upon, is that in all cases of mobile tumor in the caecal region, we should keep ever in mind the possibility of its tuberculous character, and should always be prepared to deal with such a tumor if it should be found.

This brings us to the question of treatment, which is more simple. The only treatment is surgical, and the choice of operation lies between ileo-colostomy with or without exclusion, and complete resection.

Wiener makes a strong plea for ileo-colostomy and quotes the statistics of previous operators as indicating a much lower mortality than obtains in resection and his own cases as illustrating the completeness of recovery and disappearance of the tumor after the lesser procedure. We have not had the opportunity to examine all these reported cases in detail, so as to distinguish between the results in the ulcerative and the hypertrophic forms of the disease.

Several of Wiener's cases seemed to have been more of the former than of the latter type,—i. e., were surrounded by much exudate with adhesions to the pelvis and to the omentum, and to other intestinal coils. Obviously in such cases excision is difficult, involves much rough handling of the gut, and is more dangerous than exclusion. Excision should be reserved for the purely hypertrophic cases, in which the caecum is mobile and there are ordinarily no adhesions.

In summarizing the results of 229 operations reported in the literature, Hartmann records 31 cases of resection with side to side anastomosis, with 26 recoveries and 5 deaths, and 29 cases of ileo-colostomies with 25 recoveries and 4 deaths—a difference that is practically negligible:

he reports 6 consecutively successful cases of his own, since 1900, and says that "in the hyperplastic forms of caecal tuberculosis I advise resection." We prefer to follow Hartmann rather than Wiener in this form of the disease.

It cannot but detract somewhat from the completeness and permanency of the result to leave the disabled and diseased gut behind. It is necessary to do this when the tumor is fixed, when pus is present, and when the patient's general condition demands quick action with as little manipulation as possible.

In other cases—and this should include almost all of the hypertrophic type—the radical operation is much more thorough, not difficult, and attended by excellent results. This portion of the intestinal tract is especially tolerant of excision; four recent resections—and they are all that have been done within the last 3 years—have been uniformly satisfactory.

In our opinion, in the uncomplicated cases of hypertrophic ileo-caecal tuberculosis, resection should be the operation of choice, and if the patient is in good condition a primary resection with lateral anastomosis is certainly much easier, requires less exposure of the abdominal contents and less manipulation than a two-stage operation.

DISCUSSION.

DR. G. W. W. BREWSTER: Dr. Gage's paper on ileo-caecal tuberculosis is an important addition to the literature of this disease. There are very few articles in English, and we are fortunate in having the subject presented to us in such a comprehensive manner. That this lesion occurs with considerable frequency shows the importance of discussing the best methods of its surgical treatment. I have nothing to add to what Dr. Gage has to say about the treatment, and agree entirely with the views which he has expressed.

In looking over the records of the Massachusetts General Hospital for the last thirteen years, under the diagnosis of intestinal tuberculosis I found eighty-three cases. Of these eighty-three cases the histories showed that twelve could be classed as ileo-caecal tuberculosis. There may have been others, but I have selected only the ones in which the histories were definite. Of these twelve cases, seven occurred in young people between the ages of twenty to thirty, five cases between the ages of fifty and sixty. In four cases the pre-operative diagnosis of chronic appendicitis was made. In the five cases between fifty and sixty years of age, three were diagnosed as malignant disease. In all cases a mass was felt in the caecal region before operation. There were no operative deaths. The subsequent histories of the cases have not been obtained.

Ileo-colostomy was performed in eight cases, and, in addition, in two of these eight cases a radical excision was also performed. In three of the cases simple removal of glands for diagnosis was done, and the cases were presumably inoperable. In one case the record shows that the appendix alone was removed, and proved to be tubercular. I refer to these cases simply to show that the disease occurs with considerable frequency; no careful study was made of the individual cases.

I believe that this is an important surgical le-

sion, and I feel that Dr. Gage has treated the subject in such a way as to give us definite information as to the best treatment.

RIGHT COLECTOMY, WITH SPECIAL REFERENCE TO THE END RESULTS OF A SERIES OF TWELVE CASES.

BY PEER P. JOHNSON, M.D., F.A.C.S.,
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THERE exists a great diversity of opinion as to the advisability of operative procedures for the relief of intestinal stasis and its concomitant toxemia depending upon functional disturbances of the colon. This is due in part to the fact that the end results obtained, in this country at least, by Lane's operations, total colectomy and ileo-sigmoidostomy, leave much to be desired. Crippling post-operative adhesions, requiring secondary operations, are quite apt to occur after total colectomy. I have had no experience with this operation, but Clark¹, reporting a series of twelve cases, concluded that in only six of them could the result be considered as entirely satisfactory. Three of these patients required re-operation for obstructive symptoms, and one of these died.

Lane himself appears to have discarded his original ileo-sigmoidostomy except in cases of necessity. My own experience with this operation has been limited to three cases. It was done once for an inoperable carcinoma of the cecum and upper sigmoid, and twice for obstinate constipation associated with multiple adhesions. Both of these latter cases had been subjected to many operations and one had had a resection as well of five feet of the small intestine. X-ray examination with the opaque meal showed in all three its passage to the cecum. One of these patients has four to six movements daily and the constant presence of a large doughy mass in the ceco-colon; another has nine to thirteen movements daily; while the third patient (carcinoma) has been lost sight of. There was an undoubted improvement over the original condition, but the results could not be considered as entirely satisfactory. I should under no circumstances consider the operation except as one of necessity.

As being less extreme, colo-colostomy and ceco-sigmoidostomy have been suggested as a means of overcoming stasis. These are mentioned only to be condemned. They are illogical and absolutely unsatisfactory operations. My experience with these procedures has been limited to three cases. One of these was a colo-colostomy done by myself, and the other two were ceco-sigmoidostomies done by colleagues. Each has been an unqualified failure from the standpoint of relieving the constipation. X-ray

examination in two cases showed that the barium was traversing the colon by the normal route instead of passing by the artificial stoma, and at fifty hours there was still marked ceco-colonic stasis. In fact, the stasis was no less than that shown previous to operation. The third case showed, after ceco-sigmoidostomy done for inoperable carcinoma of sigmoid, great distention of the colon and the presence of a fecal mass in the left lower quadrant. These conditions were relieved by a left colectomy.

Occupying a middle ground is right colectomy, by which is meant the removal of the terminal five or six inches of the ileum, the ceco-colon, and the first few inches or more of the transverse colon. This operation appears to be followed by less unpleasant post-operative sequelae than total colectomy or ileo-sigmoidostomy, and to be fully as satisfactory in relieving stasis. It removes the most common site of stasis and the most important surface from which the toxic substances are absorbed. Bloodgood² appears to have been the first to establish its value for conditions which he first described as chronic gastro-mesenteric ileus, and later as chronic dilatation of the duodenum. It seems to serve the purpose equally well in stasis in any part of the colon, provided it is not dependent on adhesions or organic disease. I have been greatly impressed with the striking benefits obtained from this operation in properly selected cases, and the absence of unpleasant end-results traceable to the operation itself. Quite naturally, only such cases as have failed of relief by simpler measures are considered suitable for operation, and these simpler measures have con-

wrong organ is deemed to be the source of trouble, and they are subjected to needless gastro-jejunostomies, appendectomies, oophorectomies or hysteropexies.

A brief summary of the indications for operation and the end-results in a series of twelve

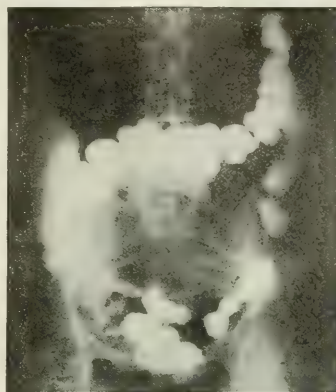


FIG. 2.—No. 6040. X-ray plate showing 96-hour stasis.

cases of right colectomy is submitted for your consideration. Three of these are of little interest because the indication for operation was organic disease, but they are included in order to consider the effect of the removal of the right colon on the bowel function and general health. One patient had an incarcerated umbilical hernia, consisting of right colon and terminal ileum with necrosis of the cecum, and two others had malignant disease of the ceco-colon. One of these had previously been operated upon and abandoned as hopeless. He is now, eleven months after operation, well and working as a street laborer. The other died of extension of the disease in the tenth week.

The remaining nine had symptoms assumed to be due to disturbances of colonic function. One patient had a chronic arthritis of two years' duration, becoming progressively worse, crippling her and confining her to bed. The right colon alone appeared to be at fault and was removed, and at the same time the gall-bladder, which appeared slightly thickened, was drained. Cultures from it, however, were negative. Clinically the relief was striking. There was immediate cessation of symptoms, and now, twenty-three months after operation, she is able to walk and use her hands for fine needlework, although the x-ray suggests some extension of the hypertrophic process.

The second patient had had for some ten years frequent bowel movements, often as high as twenty-five to thirty a day. He was a sallow man, thirty-four years of age, who, up to his present illness, had always been constipated, and especially so during his college life, although an athlete of promi-

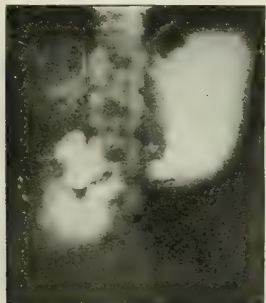


FIG. 1.—No. 6040. X-ray plate showing dilatation of duodenum.

sisted of proper abdominal support, exercises, regulation of diet, administration of suitable cathartics, intestinal antiseptics, lactic acid bacilli, colonic lavage, etc. On the whole, these patients are a most wretched class, going from doctor to doctor, hospital to hospital, and through operation after operation, seeking a relief which they almost never get. They are either considered neurasthenics and treated as such, or, when believed to have organic disease, the

nence. After graduating he commenced to have alternating attacks of diarrhea and constipation, ending finally in the persistent, urgent diarrhea. In spite of prolonged investigation and treatment, including an exploratory laparotomy and an appendectomy, he has grown progressively worse. An x-ray examination by Dr. George showed twenty-four hour ileal and cecal stasis, with what appeared to be constrictions in the terminal ileum, cecum

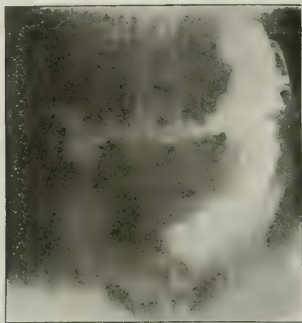


FIG. 3.—No. 6040. X-ray after right colectomy, 11 hours after barium meal, showing ileum empty.

and ascending colon. The history suggested that the primary constipation had been the etiological factor, and the x-ray seemed to confirm the belief that the seat of the trouble lay in the ileo-cecal region. At operation there were no adhesions or constrictions, but there was marked mobility of the ceco-colon, with thickening and injection of this portion of the bowel well around to the transverse colon; the terminal ileum was also thickened and the ileo-cecal valve admitted two fingers. In addition there was a very vascular pericolic membrane, enlarged retroperitoneal glands, and dilatation of the duodenum. The terminal ileum and right colon to what appeared to be normal transverse colon were removed. On opening the bowel, it was found thickened, injected, and filled with a foul-smelling dark liquid. A few small flat ulcers were found in the cecum, but owing to the contraction of the bowel it did not become apparent until some time later that it was studded with them clear to the line of amputation, suggesting that not all of the diseased tissue had been removed. The pathological report was stercoral ulcers. Later a colostomy was done to facilitate irrigation. Under irrigation the movements dropped to seven, and in two weeks, to four a day. They continued at about that average for several months, but after his return to his work they increased to nine daily. A proctoscopy, done three months after operation, showed a practically normal mucosa where it had previously been deeply injected and, at the recto-sigmoidal juncture, a small flat healing ulcer. He reports, seven months after operation, a gain of fourteen pounds in weight, marked improvement in appearance and strength, and less nervousness.

It is possible that the operation was ill advised. Further time will be needed to determine its full value. Opinions obtained from many prominent surgeons as to the proper treatment varied greatly and none was particularly hope-

ful. Cecostomy seemed inadequate, and ileostomy was objected to by the patient. However, the excellent results obtained by Lynch³ and his associates in somewhat similar cases, suggest this to be, perhaps, the more logical procedure, although I felt at the time that it would not remove the seat of the disease.

The other seven patients had symptoms which appeared primarily to be of gastric origin. Five had intermittent attacks of epigastric pain, persistent nausea and vomiting, and constipation, associated with marked failure in general health, headaches, nervousness, faintness, and often dizziness. One of these had a mental depression with suicidal tendencies. A sixth did not vomit often, and the epigastric pain made its appearance in two or three hours instead of immediately after eating, and at operation flat, non-indurated ulcers were found. The seventh did not vomit, but presented the other symptoms, and in addition a persistent crippling right-sided pain. None of these was entirely well between attacks, but all were easily fatigued, subject to nervousness and epigastric discomfort due to flatulence. With two exceptions, all were constipated. One had normally five or six movements a day, and the other thought the bowels moved at least once a day but more often five or six times; the movements were then apt to be small, liquid, and to contain hard lumps. That the bowels are now normal in one case and require mild catharsis in the other after a right colectomy rather confirms the belief that the frequency was due to stasis.

Of these seven, six were females and one male. The average age at which symptoms had begun to be more or less persistent was twenty-one, and the average duration of the illness at the time a

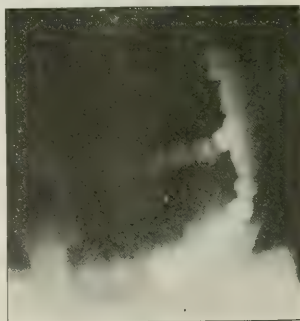


FIG. 4.—No. 6040. X-ray after right colectomy taken 24 hours after barium meal.

right colectomy was done was seven years. Five had had previous operations, four of them elsewhere. One had been operated upon twice and another four times; this latter had had an appendectomy, a laparotomy for adhesions, a vaginal repair, and finally a gastro-jejunostomy for a supposed duodenal ulcer. Neither the his-

tory, x-ray or later operative findings gave any evidence of ulcer.

Owing to the fact that these patients between their attacks often have a voracious appetite with sensation of faintness between meals, it is frequently assumed that the symptoms are due to an ulcer. Gastric analysis in five instances showed sub-acidity four times and within normal limits once. More frequently still, however, is the gastric disturbance supposed to be a reflex indigestion due to a chronic appendicitis. And what bears color to this belief is the fact that there is often tenderness and pain over the appendix, and at operation it may be in a state of chronic inflammation. Four of these seven patients had had their appendices removed, but their symptoms persisted.

The history of the first colectomy in this group brings out so clearly the major symptoms that it seems worth while to give it in brief:

Miss I. M., Scotch nursemaid, twenty-three years of age, entered the Beverly Hospital June 11, 1913, complaining of epigastric distress, persistent nausea, vomiting, loss of strength and obstinate constipation. Her symptoms had begun six years before in Scotland, first with obstinate constipation, followed later by epigastric distress and vomiting. She was thought to have an ulcer of the stomach. The symptoms persisted in intermittent attacks for three years, followed for two years after coming to this country by comparative health. After this there were three attacks lasting from six to nine weeks each. Between these attacks the health was only fair, and there were headaches, indigestion and constipation. The attack for which she sought relief had commenced in February, 1913, and had persisted, with but little respite, up to the time of her entrance to the hospital in June. The distress and vomiting came on immediately after eating and often continued for several hours. The vomitus consisted of food or dark brown liquid, and vomiting alone gave relief. The appetite was poor; the bowels constipated, never moving without medicine. There was loss in weight of ten pounds, weakness, headaches, faintness, and at times dizziness. She had been in bed for a long time, the conditions being considered secondary to ptosis and constipation. Examination of the stomach contents showed sub-acidity, while the x-ray showed ptosis of stomach and colon, cecal stasis, and the appendix. As she failed to improve, an exploratory operation was done on July 6, 1913. Conditions were found confirmatory of the x-ray: the appendix was thickened and contained concretions; practically all of the small intestines, transverse colon and a cecum mobile occupied the pelvis; the ascending colon and first portion of the transverse colon were held together by Jackson's membrane; the duodenum was dilated to the mesenteric root which was drawn very tightly across it; the terminal ileum had a very short mesentery, and the stomach was atonic and dilated. The operation consisted of an appendectomy and freeing of Jackson's membrane.

She was discharged August 7, 1913, with a proper fitting abdominal support. In spite of a long rest, diet, exercise to develop muscles and increase the capacity of her upper abdomen, her symptoms soon reappeared and she returned to the hospital on March 5, 1914. As I had been impressed with the

similarity of her symptoms to those which Bloodgood has described under the caption of chronic dilatation of the duodenum, I communicated with him. On his advice I did a right colectomy, verifying his observation that downward traction on a mobile cecum in the presence of a short mesentery to the terminal ileum produces constriction of the duodenum where the mesenteric root crosses it. Coincident with this traction there was blanching of the face, a marked softening of the pulse, and a drop of 10 mm. in blood pressure. The relief which followed the operation indicated that the symptoms were undoubtedly due to the intestinal stasis, ptosis, and secondary dilatation of the duodenum. After convalescence she returned to her work and has remained well since. The bowels move once daily.

The x-ray in every instance showed colonic stasis, and the principal and most striking operative finding was a marked mobility of the



FIG. 5.—No. 6040. X-ray after right colectomy. Barium enema. No reflux of barium into ileum.

ceco-colon. In each case it could be brought well out of the wound and twice for seven or eight inches. Once there was found an embryonic condition of the colon, i.e. failure of rotation. Four times there was marked dilatation of the duodenum clear to the mesenteric root, and twice it was recorded as being much larger than the colon. Five times the presence of large amounts of feces in the cecum was noted. In practically every case there was marked enlargement of the retroperitoneal glands and also the so-called Jackson's membrane which, however, seemed to be more often supportive than obstructive.

Of these seven patients, five have been operated on two years or more, one about ten weeks and the other six. These last two are, perhaps, too recent for a consideration of their permanent end-result, although there is marked improvement in appearance and general health with a cessation of their distressing symptoms. In the first, the relief from mental depression and an intractable vomiting of two months' duration was almost magical.

The remaining five patients are now all able to be at their work and, with one exception, consider themselves entirely relieved of their symptoms and in every way improved in health. The one exception was the patient in whom non-indurated gastric ulcers were excised but a gastro-jejunostomy not done. She, although very much improved in health, still complains of periods of epigastric discomfort similar to those previous to operation, and seen during an attack the gastric analysis showed retention and sub-acidity, while the x-ray showed twenty-four hour gastric stasis.

It is interesting to note the effect of this operation on the function of the bowels. Of the twelve patients operated on, one with malignancy died in the tenth week, and definite knowledge of the patient with the umbilical hernia cannot be obtained, although she is known to be in good health and at her work as a domestic nurse. This leaves ten cases to be considered. One patient with carcinoma of the cecum reported normal movement before operation and the same condition after. Of the six who had obstinate constipation, three report one natural movement a day, and one sometimes two; one occasionally requires mild cathartics, and another takes cathartics each night for fear of constipation. Of the three who had more than one movement a day—two reporting five or six, and the third twenty-five or thirty—the first now has one natural movement a day; the second requires mild cathartics; while the third, though very markedly benefited for the first few months, now has eight or nine. Summed up then, six have one and at the most two normal movements daily, while one occasionally, and two habitually, require mild cathartics, and one has eight or nine where he had previously had as high as twenty-five or thirty. Improvement then in bowel function followed the right colectomy in every case, and there is no evidence that it has had any but a beneficent effect on the general health.

In a post-operative x-ray study of nine cases made for the purpose of determining whether the absence of an ileocecal valve had any effect on the emptying of the small bowel, it was found that in no case was there any damming back in the ileum or any evidence of dilatation of this portion of the bowel. In all cases where there was no gastric stasis, the ileum was empty by ten and a half hours, and at this time, in practically every case, the head of the meal was in the pelvic colon, even in those patients who were constipated. After this time there was apparent slowing of the current, as though the meal were being retained in the transverse colon for absorption. Inasmuch as the emptying time of the ileum is as quick as normal, and the bowel movements are normal in consistency or slightly constipated, it would seem that the remaining colon must have the properties of absorption as well as storage, and that the lack of an ileocecal valve was of no importance. In making

these investigations a great many examinations were made at close intervals after the ileum was found to be empty, in order that we might be sure that there was no reflux into it. For her invaluable assistance in carrying out this work, I am greatly indebted to Dr. Isabel Bogan.

The operation consisted of the removal of the last few inches of the ileum, ceco-colon, and about a third of the transverse colon. In my earliest cases I did not remove as much of the transverse colon as I did later, and post-operative x-ray examination shows redundancy and ptosis of this portion of the colon, although the functional result is perfect. An ileostomy in a malignant case was done once and an ileocolostomy with suture eleven times, four times by lateral and seven by termino-lateral anastomosis. Authorities seem about equally divided between the lateral and the termino-lateral method. C. H. Mayo⁴ prefers the latter, made with the Murphy button, which undoubtedly has the advantage of shortening the operation and perhaps eliminating some of the dangers of sepsis. I have never used it. Pouching of the blind end of the ileum is the principal disadvantage of the lateral method. X-ray examination in two of these cases showed that the barium promptly left the ileum except for an area close to the transverse colon, which was persisting at twenty-four hours in one instance and forty-eight hours in the other. In an ileo-sigmoidostomy, performed by the lateral method, an ileac pouch three inches in length had formed seven months after operation.

In one case only, and then for fear of kinking, was the stump of the colon fastened to the anterior abdominal wall. So far, at least, no symptoms have arisen which suggest that failure to do this was unwise, although for the future I should be inclined to follow Mayo's method of attaching the stump into the upper angle of the wound. This he does so that it may be opened to allow the escape of gas if stasis and distention occur. Moreover, this fixation would seem to have the additional advantage of suspending the transverse colon between this point and the splenic flexure and so prevent ptosis.

Although none of these patients could be classed as good surgical risks, there were no operative deaths. In nine cases there was kept an operative chart recording the blood pressure every ten minutes and the pulse every five. In four instances there was a rather sharp drop in blood pressure which was, however, in two cases overcome during operation. The two showing marked shock were malignant cases. The five remaining charts showed an undisturbed course throughout, nor was the post-operative convalescence more serious than after the average major operation.

We have then in right colectomy an operation which can be performed with a low mortality and which offers relief to those sufferers from intestinal stasis without imposing upon them any dangers of unpleasant end-results. The

general health was in every way improved in the so-called functional cases of this series. The bowel function was in every way bettered; where constipation continued it was slight, when before it was intractable; where there had previously been diarrhea, it was entirely remedied or markedly benefited.

REFERENCES.

- ¹ Clark, J. G.: Final Results in Twelve Cases of Colectomy. *Surg., Gynec., and Obst.*, May, 1916, Vol. xxi, p. 533.
- ² Bloodgood, J. C.: *Ann. Surg.*, 1907, Vol. xvi, p. 736; *Jour. A. M. A.*, July 13, 1912, Vol. ix, p. 117.
- ³ Lynch, J. M., Draper, J. W., and Lyon, T. W.: Contribution to the Surgical Physiology of the Colon. *Ann. Surg.*, October, 1915, p. 441; Lynch, J. M., and McFarland, W. L.: Colonic Infections. *Jour. A. M. A.*, Sept. 23, 1916, Vol. lxvii, p. 943.
- ⁴ Mayo, C. H.: Removal of Right Colon. *Jour. A. M. A.*, Vol. lxix, p. 782.

DISCUSSION.

DR. JOHN T. BOTTOMLEY: Dr. Johnson's paper is most interesting, and it brings into the field of intestinal surgery some unusual features. I shall confine my remarks to two phases of the subject: first, right colectomy in its relation to the treatment of chronic arthritis and, second, right colectomy and other operative procedures in relation to treatment in a certain number of cases which we formerly classified loosely under the head "chronic appendicitis."

From the technical point of view two points in the doing of colectomy are worthy of emphasis. The posterior peritoneum should be incised to the outer side of the cecum and ascending colon, and these portions of the large intestine widely and thoroughly freed and mobilized. This procedure is essential to ease of operation. In colectomy for non-malignant conditions, the line of section through the mesentery can be carried close to the intestine; however, in the presence of malignant disease, the fact that the glands, too, must be removed forces us into the doing of a wide resection. In many patients the ileo-colic artery is easily seen running in the mesentery, and its ligature a short distance from the point of origin makes a relatively bloodless operation of right colectomy, and at the same time permits of a wide and relatively easy removal of possibly affected glands.

I have been particularly interested in the effect of such procedures as right colectomy and ileo-sigmoidostomy on cases of chronic arthritis. Such experience as I have gained from eleven cases leaves my mind in a state of doubt as to the curative value of such procedures. Of the eleven cases but one is truly cured, and the young man remains cured over three years after ileo-sigmoidostomy, despite the fact that even now roentgenoscopy shows that there is a marked iliac stasis. Yet within a few weeks I have done a right colectomy for a similar chronic arthritis, have seen the patient gain almost miraculously for a week, only to see her three weeks later practically as crippled as ever. What change did we bring about in her and how did we accomplish this change that caused so great and so immediate an improvement in this girl for the time being, and that so quickly suspended its favorable action? I do not know.

It is only fair to state that all cases we have operated on have shown speedy relief from their toxic symptoms. The malaise, the sensitiveness of the joints, the sweats, the cold, clammy hands have disappeared quickly and in many cases permanently, even when the joint-motion has remained uninfluenced.

What shall we do for that type of case which shows a symptom-complex formerly regarded as chronic appendicitis and which, when operated on, shows no evidence of appendiceal inflammation? Are we justified in employing here so radical a procedure as right colectomy? I must say that I am not convinced that we are. Many of these cases are improved or cured by other than operative means; in others I have removed the appendix and plicated the cecum, thus lessening its size. With such a colon as Dr. Johnson describes, *i.e.*, one loose, flabby and loaded with hard fecal masses (after the usual measures for emptying bowels had been employed), I should be inclined to do a right colectomy.

I want to say a word of warning with regard to two-stage operations in malignant or tuberculous disease in the ileo-cecal region. If you do at the first stage an anastomosis of the ileum to the transverse colon, be prepared to meet in the second stage (removal of the growth), a task rendered very difficult by numerous widespread adhesions.

THE ADVANTAGES OF CONSERVATIVE SURGERY IN OPERATIONS FOR DIVERTICULITIS OF THE DESCENDING AND PELVIC COLON.

By JOHN W. KEEFE, M.D., LL.D., F.A.C.S.,
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ALTHOUGH numerous causes have been assigned and various theories formed, in an effort to explain the etiology of acquired or false diverticula of the descending and pelvic colon, there exists, at present, no unanimity of opinion in this matter, and the various theories proposed have been substantiated by neither clinical nor experimental evidence.

This condition of affairs results primarily from the fact that, until recently, diverticula of the intestine were looked upon as pathological curiosities, and their clinical and surgical import either not realized or insufficiently appreciated. Virchow, thirty years ago, referred to diverticula, as an "unusual pathological condition," but, during these thirty years, our views have changed in regard to this subject, and our knowledge of it has progressively increased.

Many conflicting opinions are held in regard to the etiology of this disease. We have Klebs' statement that it results from traction exerted on the bowel by the mesentery, and the opposite view of Hansemann that pulsion within the bowel is the primary cause. As a further instance of the existing diversity of opinion, Klebs' statement may be mentioned, that the condition occurs in fat people, while Hansemann seems to lay emphasis on the fact that most of his subjects were lean.

Although the consensus of opinion seems to be that diverticula occur in middle life, nevertheless, there are a few cases recorded occurring at the ages of three and seven years.

This conclusion in regard to the subject, which has proved not only of great scientific interest, but also of considerable practical importance, is doubtless due to the fact that deductions have been made and theories have been based on post-mortem experiments on the intestine, and analogies have been made which were not justified, and premises assumed which were untenable.

Heschl, Hanau, and Good, by filling the intestine of cadavers with water, under pressure, found that the point at which rupture usually occurred was at the mesenteric border, and since this apparently was the weakest part of the intestine, they assumed that this *locus minoris resistentiae* constituted an etiologic factor in the production of diverticula.

Hansemann, with similar experiments, confirmed these deductions and, going a step further, produced artificially in the intestine of old people, false diverticula, along the sheaths of the veins.

The inadequacy of the theory, advocated by these investigators, is manifest when we consider that it does not explain the occurrence of diverticula opposite the mesenteric border.

We must bear in mind that errors are common when we apply to the living subjects conclusions based on post-mortem experiments.

Klebs' theory of traction on the mesentery being a causative factor is hardly tenable, inasmuch as it fails to explain the occurrence of diverticula on the side opposite the mesentery.

It can be demonstrated that the mesenteric border is not the weakest part of the bowel. When distended artificially during life, rupture takes place opposite the mesentery. Intramesenteric ruptures, if they do occur at all, are rare.

With ileus of the intestine, we find that the peritoneum and underlying muscle layers tear and separate, not at the mesentery, but generally more or less opposite the mesenteric attachment. The theory, advocated by some observers, that the sheaths of veins constitute a weak point and are, therefore, a factor favoring the development of diverticula, is conceded to be correct to the extent that, on the mesenteric side of the gut, they constitute a path of least resistance along which a diverticulum is likely to develop.

Beer, who has thoroughly studied the subject experimentally and clinically, after numerous experiments and an exhaustive study of the literature, arrives at the conclusion that the primary factor in the development of the diverticulum is a muscular deficiency in the intestinal wall; traction of the gut by the mesentery and intra-intestinal pressure due to the accumulation of gas and feces, incident to constipation, being secondary factors. This theory is in consonance with the results of all approved experimental investigation and clinical observation.

While cases of intestinal diverticula may occur without manifesting any symptoms, it is a fact based on statistics that 60% of all cases eventually have symptoms.

The symptomatology of this condition is gen-

erally definite and characteristic, and failure to recognize it is due, not so much to the absence of well-defined symptoms, but to the fact that the subject is one, the surgical significance of which is not duly appreciated by the medical profession.

This state of affairs no doubt is due to the scarcity of contributions of a practical nature on this subject, in medical journals, and the absence of even reference to it in some of the recent text-books.

It may be said in general that the symptoms are those of appendicitis, with the exception that they are localized on the left side instead of on the right. There is generally a chill and a rise in temperature, with a leucocytosis; pain, usually of sudden onset, and definitely localized in the left lower quadrant; tenderness on pressure; muscular spasm; and a sense of resistance or a palpable mass to be felt in this region.

Vesical tenesmus and frequency of micturition occasionally occur. These symptoms, suggestive of acute inflammation, may subside in a few days, but are usually followed by recurrent attacks.

While generally the diagnosis of diverticulitis can be made with a fair degree of accuracy by those conversant with the subject, it is at times extremely difficult to differentiate it from carcinoma, pelvic peritonitis, tuberculous and luetic growths, and left-sided appendicitis. The rarity of the latter condition, and the fact that it can be excluded absolutely by determining the position of the cecum by a roentgenological examination, and the exclusion of the other possibilities by careful physical examination and by appropriate tests, reduce the possibilities to two, namely, diverticulitis and carcinoma.

Many non-malignant tumors, the result of pathological processes originating in an infection of a diverticulum, have been mistaken for carcinoma, and the frequency of this error is to be explained by the fact that the location of these tumors of the descending and pelvic colon, and the period of life in which they generally occur, the so-called cancerous period, naturally suggest a malignant growth.

In many instances, not until the tissue has been submitted to a pathological examination, has the diagnosis of diverticulitis been made. Cases diagnosed as carcinoma, in which colostomy had been performed as a palliative measure, and which lived far beyond the period which the supposed diagnosis warranted, were, no doubt, cases of diverticulitis.

In a series of twenty-seven cases, with a mass in the large intestine, and all occurring in the "cancerous period," 74% proved to be cases of diverticulitis. The masses were found to be inflammatory tissue with diverticula in the colon. From these facts two valuable lessons may be learned: first, in exploratory laparotomies, scrupulous care should be exercised by the surgeon in handling the large intestine, especially

the sigmoid, on account of the danger of rupture of an abscess in cases of frail diverticular walls, due to pressure; secondly, it is hazardous to give a definite diagnosis and prognosis without a pathological report.

In the differentiation of diverticulitis from carcinoma, a protoscopic examination is of no value, except in the rare cases in which intussusception has occurred into the rectum.

The presence of blood in the stools is an important diagnostic sign in favor of the diagnosis of carcinoma, while its absence warrants a suspicion of diverticulitis.

The greatest aid in differentiating between these two conditions, however, is afforded by roentgenology.

In cases in which a diverticulum is present, the findings after an opaque meal has been given, are as follows: small rounded shadows are seen in the affected areas, these being the residue of the opaque salts retained in the diverticulum. This filling defect resembles very much that occurring in cases of carcinoma.

The identifying feature is the fact that, in the case of diverticula the shadows always appear in groups, and constantly maintain the same relation to each other, which is not the case when carcinoma is present.

They are best seen on the second or third day, and generally show to better advantage after a barium enema has been given.

Ureteral stones, phleboliths, and calcified glands produce shadows almost indistinguishable from those of barium-filled diverticula. These shadows, however, can be differentiated in the following way: during a screen examination, palpate over the mass and, if a diverticulum be present, the barium-filled area will move with the bowel, which, of course, is not the case with ureteral stones, phleboliths, or calcified glands.

This method of differentiation is applicable only in cases in which the upper sigmoid is involved, inasmuch as the lower sigmoid cannot be shifted by palpation. In the latter case, it is necessary to make a plate or screen examination before the enema is given. The antero-posterior view is usually the best on account of the frequency with which diverticula occur at the mesenteric border of the bowel, but as there is considerable variation in the site of their occurrence, it is well to resort to stereoscopic roentgenograms and to make screen and plate examinations at various angles of observation. The liquid enema, introduced under some pressure, has been found to be more satisfactory than the opaque meal, since it is more likely to fill the diverticulum, while the opaque meal usually scatters more or less through the bowel.

In a general way it may be said that the success or failure of an x-ray examination, in a case of diverticulitis, depends on two factors: first, whether or not the diverticulum is filled with a fecal concretion which might preclude the possibility of the entrance of the barium; and second, whether or not the inlet to the

diverticulum is stenosed, since cases have occurred in which stenosis had progressed to such a degree that the liquid enema was prevented from entering.

While it is true that a diverticulum may be present giving rise to no pathogenesis, yet in 60% of cases infection does take place through these intestinal diverticula, and complications of a grave nature frequently arise, and may terminate fatally.

The most constant finding is that of a chronic extramucosal inflammation, which frequently results in tumor formation which is mistaken for carcinoma.

Peritonitis results from perforation of a diverticulum, the walls of which have become thinned out from pressure and ulcerated by the presence of fecal concretions, with attendant bacterial invasion.

Acute or gangrenous inflammation of a diverticulum occurs, frequently resulting in an abscess, which may remain localized or may rupture into the general peritoneal cavity, intestine or bladder. This condition is made manifest by fulminating symptoms of peritonitis. We may also have a retro-peritoneal abscess or an abscess may rupture between the mesenteric folds, and several cases are recorded in which an abscess extended even to the liver and the left kidney.

Another serious condition to be borne in mind is the possibility of adhesions of the inflammatory mass to adjacent structures, with the attendant danger of intestinal obstruction. Fistulae and fistulous tracts between the diverticulum and some viscus are of rather frequent occurrence. Fistulae between the bowel and the bladder are the most common.

As one of the more unusual complications, may be mentioned chronic mesenteritis, resulting in thickening and kinks, a possible cause of volvulus. As one of the very rare sequelae, it is interesting to report one case of metastatic suppuration in the liver, resulting from a diverticulitis. Finally, it must be remembered that a diverticulum may undergo malignant, degenerative changes resulting in carcinoma.

After considering the pathology of diverticulitis, remembering the extensive and grave complications which usually follow, one must admit that few conditions demand greater nicety of judgment, greater skill, and more conservatism than the surgical condition resulting from the infection of a diverticulum.

Time and time again, in fact, unfortunately too often, it has been demonstrated that diverticulitis, with its serious complications, is not a case for extensive, brilliant and radical operation, but is one in which conservatism is the better course to pursue.

The questions which confront the surgeon are: shall we resect the diseased intestine, or shall we perform a colostomy above the diseased area, thus allowing the inflammation to subside;

and if we select the former, what method of procedure shall we adopt?

Shall we content ourselves with opening and draining an abscess resulting from diverticulitis, or shall we attempt to remove the diverticulum? And another difficult question that arises is, how shall we proceed when there is present a fistula between the colon and the bladder?

The surgical procedures which will be found applicable in the largest number of cases are as follows: through a left rectus or muscle splitting incision in the left iliac region, the left lower quadrant is explored, and if an abscess is found it is drained. Although some surgeons advise the removal of the diverticulum coincidentally with the draining of the abscess, the more conservative plan of deferring this to a subsequent time, when a more extensive operation can be undertaken with less hazard to the patient, is to be commended.

The two-stage operation often gives good results. A loop of the bowel containing the affected area is drawn through the abdominal wound, and the walls of the normal bowel above and below this mass are stitched together. The two portions of the bowel below the loop of the intestine withdrawn are then sutured to the parietal peritoneum. About forty-eight hours later the diseased area of the bowel is removed with a cautery, thus completing a colostomy. A secondary operation may be performed at some future time, and the openings in the bowel closed.

In cases of fistula between the bowel and the urinary bladder, the surgeon should first make a careful cystoscopic examination, to determine the size and location of the opening in the bladder. The peritoneal cavity is then opened, the adherent colon and diverticulum separated from the bladder, and the opening in the latter is then closed.

The involved colon may then be resected and an end-to-end or a lateral anastomosis made, but here, too, the more conservative two-stage operation should be the choice in many instances, as it is the less hazardous procedure. As to the relative advantages of lateral compared with an end-to-end anastomosis, the former, when we have sufficient bowel to work with, is preferable on account of the greater tendency in the latter operation to leakage at the mesenteric border, due to the liquefaction of the fat which occurs between the leaves of the mesentery.

SUMMARY.

1. Our knowledge of the origin of intestinal diverticula is meagre, and but little unanimity of opinion exists relative to the etiological rôle played by the several factors mentioned as causes.

2. The symptoms are definite and characteristic, and failure to recognize the condition arises more from a lack of knowledge of it and a

failure adequately to realize its importance, rather than from any inherent difficulty in the diagnosis.

3. Inasmuch as the location of the region involved and the period of life at which the condition occurs are identical with those of malignant growths, the differential diagnosis between these two conditions becomes difficult and is of paramount importance. Other conditions to be differentiated are: left-sided appendicitis, and tuberculous and luetic growths.

4. The x-ray examinations afford a most valuable aid in diagnosis and are of especial value in differentiating between diverticulitis and carcinoma.

5. As a result of infection through intestinal diverticula, grave, and not infrequently fatal, complications arise, namely:

(a) Chronic extramucosal inflammation, frequently resulting in tumor formation and simulating carcinoma.

(b) Peritonitis resulting from the perforation of a diverticulum.

(c) Abscess formation.

(d) Intestinal obstruction, due to adhesions of the inflammatory mass to contiguous structures.

(e) Fistulae and fistulous tracts, particularly between intestine and urinary bladder.

(f) Chronic mesenteritis.

(g) Metastatic suppuration in the liver.

(h) Malignant changes resulting in carcinoma.

6. In deciding on the type of operation to be performed in a case of diverticulitis, the one fundamental principle which, to the exclusion of all others, should guide the surgeon, should be that of conservatism. With this serious surgical condition he should aim, not at completeness and a display of surgical technic, attempting to do a brilliant and radical operation with great hazard to the patient; but, rather, should strive to preserve life through the gravest part of the illness, employing such palliative procedures as draining an abscess, performing a colostomy, or adopting, in suitable cases, the two-stage operation.

Statistics from various authorities have shown conclusively that extensive resections of intestine, done in the presence of infection, as is always the case in operations for diverticulitis, are, in a large percentage of cases, fatal.

DISCUSSION.

DR. SAMUEL J. MIXTER: In the old days I used to operate for cancer of the sigmoid, and the patients got well and stayed well. One of the worst nuisances in my life was the patient who got well, stayed well, and then took "cancer cure." They had diverticulitis.

Diagnosis is difficult on the operating table. One can never be sure until the specimen has been examined under the microscope.

The cases of relapsing diverticulitis are seen in

men more often than in women. There are symptoms of more or less obstruction with pain and little temperature, and you can feel resistance or mass. The patients are not very sick. You know they have a diverticulitis. After a good thorough starvation and a large colon irrigation they get well. They may have these attacks frequently or at intervals if they neglect constant lavage. What are you going to do with those people? Are you going to subject them to a colostomy without their consent? I would shoot anybody that did that to me. Or are you going to resect that sigmoid and do one of the most dangerous operations in surgery? If you have to go low it is difficult. What are you going to do with those cases? Perhaps the reader will tell us.

One word about the position of the artificial anus. With an artificial anus, the nearer you can get to the umbilicus, the better you can apply the apparatus; the nearer the umbilicus the better—that is the centre of motion.

RESECTION OF THE DESCENDING COLON AND RECTUM.

By FRANK H. LAHEY, M.D., BOSTON.

THE principles and practice of resection of the descending colon, including the rectum, have become so well standardized that to do other than speak of certain procedures and emphasize certain others which have proven valuable in my hands would be but a tiresome repetition of what, no doubt, have already become well-established methods in your own hands.

The indications for resections of this segment of the intestine, owing to the limited variety of conditions arising at this level, must always necessarily be for but a few pathological lesions, such as malignant growths, carcinoma and sarcoma, errors in development, as Hirschsprung's disease, trauma, the lacerations resulting from direct violence through the abdominal wall and those received through the rectum, the effects resulting from inflammation, diverticulitis, rarely tuberculosis and syphilis, or their resulting strictures, and finally the intussusceptions occasionally occurring at the sigmoid flexure.

Regarding carcinomata (I have had no personal experience with sarcomata), I am less and less enthusiastic about the resections for cases not well within the operative limits prescribed for these cases,—free mobility; by this I mean not only that the growth has not involved neighboring structures, but is so slightly fixed to them that it can be detached without difficulty from them; lack of metastases, and by this I mean, not only that palpable metastases are absent at the time of examination and operation, but that no metastatic foci are demonstrable in any situation upon careful x-ray examination. I am forced to admit that local and metastatic recurrence in these cases has caused me to limit more sharply in my cases the indications for resections and amputations at this level.

I have had occasion to remove the dilated and atrophied descending colon in connection with complete colectomy three times, but have had no experience with Hirschsprung's disease. In this connection I would say that I believe that end-to-end anastomosis of the ileal to the rectal stump is safer and superior to lateral anastomosis because of the strain put upon the blind end of the ileum and the danger of leakage—to say nothing of the proneness to pouch-formation here. In this connection I wish to call attention to the idea of buttressing the ends in lateral anastomosis, as mentioned by Crile, and which, no doubt, many of you already do.

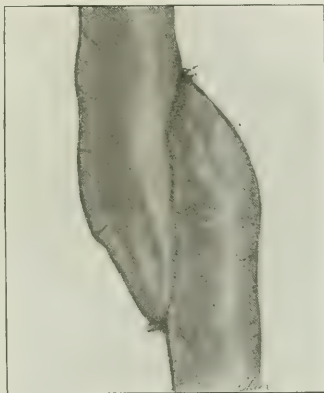


FIG. 1.

Method of buttressing ends in lateral anastomosis.

Little need be said regarding resections for trauma, except that it is undoubtedly true that many traumatic cases would survive that otherwise die, were a temporary colostomy done at the primary operation, with secondary establishment of the fecal current at a later day.

Regarding inflammatory conditions, it is the writer's opinion that either the above procedure, mentioned in connection with trauma, or simple drainage, is by far the safest conduct of that group of cases coming under the head of sigmoiditis, perisigmoiditis, or diverticulitis. I have operated upon six of these cases; four were drained and two were resected, one of the resected cases dying and two of the drained cases dying. Nevertheless, it is my opinion that resection with primary anastomosis is a highly dangerous procedure in this group, because of the danger of spreading what is often a virulent infection, and because of the danger of leakage in a bowel wall in a condition to some degree pathological because of its close association with an infected area.

Mobilization of the splenic flexure is a procedure which is of value in bringing the proximal segment down in anastomosis following resections of considerable extent in the descending

colon or sigmoid, and a procedure of necessity in complete resections of the colon.

The splenic flexure is the most acute angulation of all the flexures within the abdomen, due first to the phreno-colic ligament,—a fold of peritoneum attached at this flexure, and arising from the diaphragm between the tenth and eleventh ribs,—and second, to the fact that the descending colon is not completely covered by peritoneum until it reaches the level of the crest of the ilium. An arrangement is thus made whereby one limb of the angle is fixed, the descending colon and the other limb free, the transverse colon, the angle itself being accentuated by the

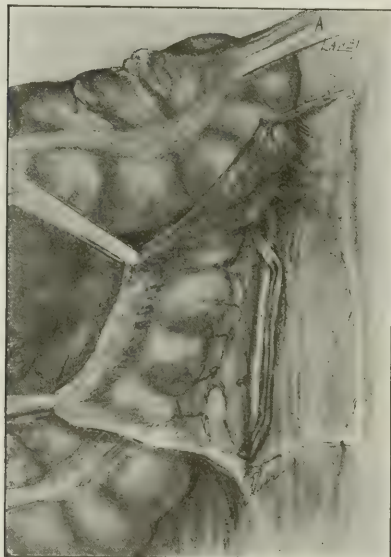


FIG. 2.

Illustrating phreno-colic ligament (A), and incision in outer leaf of peritoneum. (Redrawn from Mayo.)

attachment of the phreno-colic ligament to it; and it is by severing these two practically bloodless attachments that mobilization is accomplished.

The descending colon is easily loosened from its attachment to the abdominal wall by an incision parallel to its long access through its external fold of peritoneum and close to its outer edge. The bowel may then be wiped inwards, its internal fold containing its blood supply separating easily as far as the median line, if necessary; the bowel may then be put upon the stretch and the phreno-colic ligament cut under direct vision. The severing of the gastro-colic omentum between ligatures now permits of the complete obliteration of this flexure, and the easy approximation of ends before this, widely separated.

Lateral anastomosis is not well suited for this

segment of the intestine, containing, as it does, solid feces, and because of the liability of fecal concretions accumulating in the form of hard and irritating masses in the blind end of the proximal segment.

End-to-end anastomosis is the ideal form of anastomosis, particularly in this portion of the large intestine. Its greatest disadvantage in my hands has been the difficulty of inserting the suture, and the possibility of leakage. Both of these factors are due, in my estimation, to the deposits of fat and the epiploic appendages so common in this segment of the bowel. Without going into the detail of each method of applying sutures, there are three forms of suture applicable in this procedure: the continuous suture of one form or another, some form of interrupted suture, and the telescoping procedure proposed by Gibson. Although dissatisfied with it, I have made use of the continuous suture reinforced with interrupted ones up to recently, when I have returned to the interlocking interrupted suture published by me in the *Annals of Surgery* in January, 1910, the illustrations of which may be seen in Vol. VI of Keen's *System of Surgery*. The advantage of this suture in this portion of the bowel over continuous and other forms of interrupted suture lies in the fact that each stitch is tied separately and tightly approximates that segment of bowel included in the stitch to the neighboring end, even though a tab of fat or epiploic appendage chances to lie within the grasp of the individual suture; and further, in that each stitch is interlocked through the same stitch-hole, thus allowing no dangerous spaces between two sutures through which leakage can occur. It is this factor in this locality which makes the continuous suture and other forms of interrupted suture so unsatisfactory to me. Because of the danger of constricting the bowel too much, it is impossible to tighten a continuous suture in the descending colon sufficiently so that a leak may not occur if one or more epiploic tabs chance to lie between two bites of the suture. This same element of danger exists with non-interlocking interrupted suture should an epiploic tab in the same way chance to lie, either entirely or in part, in the unconstricted space between the sutures.

Should doubt exist concerning the security of the suture line in these anastomoses, an attempt should be made to strengthen the line of anastomosis by some form of reinforcement. If the omentum be sufficiently long, or the anastomosis high enough, a portion of the omentum may be wrapped around the line of suture and fixed to it by interrupted sutures of fine catgut. If this is not possible, either a completely detached strip of omentum may be applied around the suture line or the whole line of suture invaginated into the lower segment, and interrupted sutures of fine catgut applied at intervals around the bowel to retain it in that position.

The technic of resections in the descending colon and sigmoid, provided the procedure of

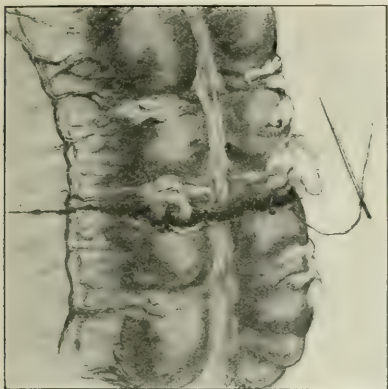


FIG. 3.

Illustrating how the interposition of fat tabs prevents accurate coaptation of serous edges.

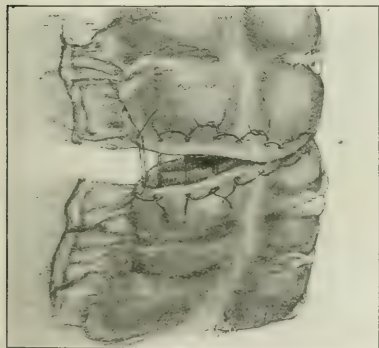


FIG. 4.

Illustrating method of applying interlocking mattress suture of the author. Note that first stitch (A) is not tied, so that the last stitch may be locked into it.

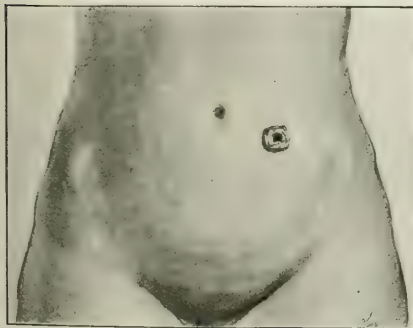


FIG. 5.

Location of artificial anus and redundant colon.

freeing the bowel described above is practised, consists almost entirely in the method of anastomosis already taken up, as, with the outer leaf of peritoneum cut, removal and control of the blood supply becomes comparatively simple. In dealing with the rectum, however, no such unanimity of opinion concerning technic occurs, and one must select from a formidable array of procedures, such as two-stage, abdominal, combined sacral-perineal, and vaginal operations.

In the time allotted it is impossible to enter into the details of each method. It has been my custom to employ the combined operation,—abdominal and sacral,—when possible, because with this operation the liver and remainder of the abdomen may be explored for metastases, thus preventing an extensive operation offering no prospect of cure, because the intra-abdominal extent of the growth may be accurately ascertained, because the control of blood supply and preservation of neighboring structures may be comfortably and safely carried out under direct vision, and because by the rapid performance of a colostomy and closure of the distal stump, the operation may be terminated and continued at a second sitting.

My experience with the Kraske procedure, except as part of the combined operation, has been extremely limited, and I feel that I would reserve it for those patients who are too fat to make the combined operation worth undertaking.

Following two very successful implantations of the upper segment into the skin at the normal

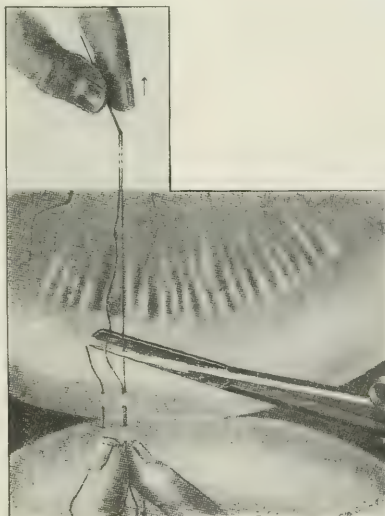


FIG. 6.

Illustrating method of pulling on tail of stitch so that one of the two strands becomes slack, the other remaining taut. The slack strand is always the second limb of the mattress and the one to cut.

site of the anus. I became somewhat enthusiastic about this procedure, but at this time I am inclined to the commonly accepted view that it distinctly increases the danger of local recurrence in those low-lying carcinomata of the rectum to which it would naturally be applied. One case in which the external sphincter was preserved, and by far the more favorable of the two, has had a recurrence locally, and the other, who refused anything but an opening at the normal site, even without a sphincter, has now gone over three years with no recurrence.

Regarding the situation of the artificial anus in these cases, it has been my preference to make a stab wound through the fibres of the rectus to the left of the wound, to insert an Ochsner clamp through it to close it upon the portion of bowel at the level desired, to apply a similar clamp below, and to sever between with a cautery. The clamp is then withdrawn upon the abdomen, a few supporting sutures applied to the edges of the stab wound and bowel, and the clamp opened at a later date.

It has seemed in my cases that an anus here, rather than nearer the anterior superior spine, has been more satisfactory because of the greater ease in keeping an apparatus over the opening, particularly in thin individuals, whose anterior superior spines tend to stand out prominently, making the close application of an inflated ring impossible.

One other step has been of value to me,—that is the pulling of a considerable portion of the colon out onto the abdomen, so that there is a marked pouting at the site of the anus. This provides a distinct elevation, over which the ring may be placed, and to a considerable degree preventing the ring from slipping out of place.

DISCUSSION.

DR. JOHN W. CHURCHMAN: I should like to ask one question about this paper. As I understand these cases of tuberculosis of the cecum, they are usually accompanied by ulceration of the mucous membrane. Nothing was said about whether the stools were examined or not for tubercle bacilli. The examination of the stools for tubercle bacilli is, of course, a difficult matter, but Petroff of Saranac has recently devised a method of cultivating the tubercle bacilli in pure culture from the stools, which has been fairly successful. A medium is used containing gentian violet.

GENERAL DISCUSSION.

DR. LINCOLN DAVIS: Dr. Gage's paper interested me very much. I have had a small experience in this disease. I had one case last summer of resection of cecum and ileo-cecal valve for tuberculosis. When I had completed the operation and was about to close the wound, I found another extensive area of tuberculosis high up in the ileum which I was obliged to leave. This case has shown me the importance of making a thorough search of the whole peritoneal cavity at the start. In this case I was also troubled with caseous lymph nodes, extending up to the root of the mesentery. I at-

tempted to get these out, adding considerably to the difficulty of the operation. I should like to know how Dr. Gage treats these.

In regard to carcinoma of the rectum, that is a tremendous problem. Unfortunately, the cases I see are far advanced. Such cases must accept the disabilities of an artificial anus. It would seem desirable to do a combined operation in one stage, but upon looking up the literature on the subject I found the mortality of such operations very high, about 50%. It seems to me that it is up to somebody to take up the combined operation in one stage, and improve the technic. With an assistant working in the perineum at the same time, perhaps, that the abdominal operation is being done, time might be saved. It is a great advantage to be able to free up the sigmoid and upper rectum from the abdominal side, and then pull the whole mass down through the perineum. I could not catch from Dr. Lahey's paper whether he had done the operation in one stage or two.

DR. R. B. OSGOOD: In regard to immediate improvement after operation; some time ago in cases of chronic arthritis we tried a simple etherization without any tonsil operation. Etherization had exactly the same immediate effect as far as the joints were concerned. That is possibly the explanation.

DR. J. T. BOTTOMLEY: Any light that may be thrown upon this obscure question is most welcome. However, I cannot believe that the effect of etherization—if it has any effect in these cases—can last three weeks. There must be some other factor to explain the improvement which takes place in many instances. I hope it is etherization, but I do not think so.

DR. OSGOOD: I have no theory on the subject. I am simply reporting an occurrence.

DR. E. P. RICHARDSON: A large number of cases at the Robert B. Brigham Hospital have chronic arthritis. Of these cases there were only two in which it seemed advisable to try radical surgical measures. One had a right colectomy; the other an ileostomy, which was left open for a year, thus totally excluding the large intestine. Both of these cases showed some improvement, but no more than other cases treated by conservative measures. We have not felt encouraged in undertaking radical operations on the large intestine in chronic arthritis.

DR. A. C. HEFFENGER: The advisability of the continuous, or the two-stage, operation for cancer of the sigmoid or rectum must depend largely upon the nature and extent of the involvement and condition of the patient.

The technic of Roux, of Laussane, in the continuous operation is the cleverest and quickest I have seen. He does the abdominal stage first, dropping the cancerous iliac colon below the pelvic peritoneum which is closed over it.

The proximal end of the divided colon is next brought out at the upper angle of the abdominal wound, and the peritoneum and fascia sutured from the point of its emergence to the lower angle of the wound. The delivered gut is then placed on the fascia so that its free end opens on the skin at the lower angle of the abdominal wound. The skin is finally sutured over it to point of exit, where the artificial anus is established.

The second stage of the operation is now begun. The anus being closed with sutures, an oval incision is made around it and the rectum freed and pulled out with the previously detached iliac colon.

A deep drain is now laid in the rectal space, and most of the skin wound sutured. There is comparatively little hemorrhage during the operation, as the circulation is well controlled when the mesentery of the iliac colon is tied off down to the rectum. The use of the Reverdin needle during the abdominal stage of the operation shortens the operating time one third.

Book Reviews.

Obstetrics. By EDWARD BRADFORD CRAGIN, A.B., A.M. (Hon.), M.D., F.A.C.S.; Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University. Illustrated with 499 engravings and 3 plates. Lea and Febiger: Philadelphia and New York, 1916.

Professor Cragin has divided his book into six parts: Part I, Anatomy and Embryology; Part II, Physiological Pregnancy and Its Management; Part III, Pathological Pregnancy; Part IV, Pathological Labor; Part V, Obstetric Surgery; Part VI, Pathological Puerperium.

Professor Cragin in the preface states that in the work he endeavored to cover the subject concisely and to eliminate unnecessary discussion, basing the methods advocated upon the statistical results of the Sloane Hospital and his private practice.

Dr. Cragin has given the profession a most excellent work. It is a pleasure to read it, and each page contains valuable facts backed up by the author's wide and varied experience. To review the excellent points in the book would mean to take up each chapter by chapter. Especially interesting and valuable are the chapters on the care of the pregnant woman, the toxemias and the hemorrhages in pregnancy. The thor's remarks on mastitis and breast abscesses are very short and for the student are of little value. To impress the student or the recently graduated interne that speed in performing a Cesarean section is so essential as the author seems to deem it, is in the reviewer's opinion a mistake.

The illustrations are many, well chosen and executed. That that barbarous Schultze method of resuscitating the newborn baby is given a page, especially when the author does not recommend it, is to be regretted. The traction handle in the two illustrations of the Tarnier axis-traction forceps is placed wrongly, and in the next edition should be corrected.

The book is well made and printed, not cumbersome, as so many of the text books are, and remarkably free from typographical errors. The Sloane Hospital is to be congratulated that it has had such an able exposition of its methods which, of course, Dr. Cragin is responsible for. It is a book which must be in the hands of all serious-minded obstetricians.

Bone and Joint Studies. I. By LEONARD W. ELY, Associate Professor of Surgery, Orthopedics; and JOHN FRANCIS COWAN, Assistant Professor of Surgery. From the Laboratory of Surgical Pathology, Stanford Medical School, 1916.

These studies of Ely and Cowan comprise five separate arbeits.

1. Experimental resection of the dog's knee joint (Ely and Cowan).
2. The resection of the tissues of the knee joint of the rabbit to injury (Ely and Cowan).
3. Regeneration of bone marrow (Ely).
4. A study of 100 dry bones sawn in the laboratory (Ely).
5. A study of the sterno-clavicular joint (Ely).

Many new and interesting facts seem to have been established. It was found, for instance, that in spite of a formal resection and subsequent immobilization of the knee joint of dogs, only two out of twenty-two resulted in bony union, and in twelve of these there remained motion of 20° or more when the animal was sacrificed, in most cases several months after the experiment. It seems evident that when only small portions of the bone ends are removed in dogs' knee joints, bony ankylosis will not ensue, as it usually does in human cases. If much bone be removed, a true joint with articular cartilage will not form in dogs.

The transformation of synovial membrane into cartilage has been noted and also the replacement of cartilage by fibrous tissue, with or without synovial membrane on its surface. These results confirm the findings of other workers, that cartilage and synovial membrane are similar structures and that one may replace the other. Where synovial membrane is subjected to pressure it is more likely to transform into cartilage.

In the experiments on the reaction of the tissues of the knee joints of rabbits to injury, it was found that if small portions of the cartilage were removed from the intercondylar space where there was no pressure, no new cartilage formed in the majority of cases, but when, in addition, a hole was bored through the bony buttress beneath into the marrow, new cartilage did form and a new bony plug shut off the marrow.

Ely found in his work on the regeneration of the bone marrow that, after its removal from the shaft of the rabbit's tibia, it quickly regenerated and left scarcely any trace of the operation.

The observations on 100 sawn bones and the studies of some 90 supposedly normal sterno-clavicular joints in autopsy subjects are both interesting and valuable contributions.

The entire collection of papers represents research in bone and joint fields, carefully carried out, fruitful in results, and presented with such adequate illustrations and summarized conclusions that they may be read with profit, not only by the laboratory worker, but by the clinician.

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THE PROTEST AGAINST INDUSTRIAL HEALTH INSURANCE.

SINCE the beginning of the debate in the community and the medical profession on the subject of industrial health insurance, the JOURNAL, desirous as it has always been, for fair representation of both sides in every arguable question, has published numerous communications, protesting, not only against specific measures of industrial health insurance, but against the general principle upon which such insurance and other measures of social legislation are based. It has published also letters approving industrial insurance and original articles of exposition or advocacy on both sides of the question.

In another column of its present issue, the JOURNAL publishes another critical communication of protest, proceeding from physicians of the important industrial center of Fall River, to which the attention of the medical profession throughout the state is directed. In this connection there is particular interest and pertinence in the popular address, delivered on

February 11, by Dr. F. J. Cotton, at the Harvard Medical School on "The Development of Employers' Liability Insurance in Accident and Sickness." In this address Dr. Cotton reviewed his personal experience with the subject and is reported in his remarks to have commented as follows on his conclusions therefrom:

"I worked for some time on the medical end of the health insurance problem trying to solve some of the difficulties that would present themselves. But now I don't see why it should be a medical problem. The only reason that can be given is precedent. Why not let the doctors alone and let it be run the same as any insurance plan? Let the workman be insured, but let him receive enough compensation so he can go to a hospital or call his own doctor and pay his bill himself.

"The plan would, of course, lead to physical examination in employment offices. That will mean that many men will be rejected because of some ailment that they themselves may not suspect. Those turned down would add to the already heavy burden of institutions. The plan would also necessitate a medical referee, who could determine when a man is fit to return to work.

"Everywhere the health insurance plan has been tried it has been found that recuperation takes longer and longer. Some of that is due to ignorance on the part of the patient, who doesn't know whether he is fit to go back to his bench. More of it, I think, is due to disinclination to return to work. The attendant doctor would be less able to tell the patient whether he is fit, and so an impartial doctor would have to be called in.

"Two worth-while things have resulted where health insurance has been tried. One is alleviation of suffering because of the two-thirds pay that accompanies sickness. The other is the precautions taken to prevent accidents. The only betterment to the workingman is the wages he receives while sick; the medical attention he gets under health insurance is no better.

"In some places health insurance has led to disgusting competition between cheap doctors and real practitioners."

These comments from a surgeon of Dr. Cotton's position and experience are illuminating. With reference to the communication from Dr. Dolan, there should be no reason for the impression that the JOURNAL's editorial attitude in the question of industrial health insurance or on any other matter has been, or would ever be, one of antagonism to the members of the Massachusetts Medical Society, whose welfare the JOURNAL has most sincerely at heart. It is, however, the JOURNAL's function, as an independent scientific publication, apart from its position as

the official organ of the Massachusetts Medical Society, to afford free opportunity in its columns for the dignified and proper expression of differing opinions and for the legitimate discussion of problems of importance to the medical profession in its relation to the community at large. This function, we believe the JOURNAL to be discharging without bias in the present situation.

LEGISLATION FOR CONTROL OF TUBERCULOSIS.

THE control and gradual suppression of tuberculosis in any community must be dependent not only on the zeal and efficiency of organizations and officials concerned with the subject, but also on adequate legislative support and authority for their action. The anti-tuberculosis legislation in Massachusetts is, in the main, adequate, but it still lacks provision for the control of wilfully careless and incorrigible tuberculosis patients, and the compulsory removal from their homes of patients whose continued presence there is a jeopardy to others. In accordance with this necessity, the Massachusetts Association of Boards of Health has, this year, submitted to the Massachusetts General Court two bills designed to supplement existing legislation and to meet the requirements of the conditions stated. The first of these bills (House 74) is concerned with "the removal of certain persons infected with tuberculosis," and its provisions are as follows:

SECTION 1. Whenever it shall appear to the board of health of a city or town that, by reason of his wilfulness or carelessness, the condition of a person suffering from tuberculosis is such as to endanger his family or the public, such board of health may request the justice of the police, municipal, or district court having jurisdiction in the district wherein such person resides, to order his removal either to some proper institution for the care of tuberculous patients in the locality in which the patient resides, or to some other such institution maintained by the state. If the magistrate is satisfied, after full investigation that, by reason of his wilfulness or carelessness, the condition of the person suffering from tuberculosis is such as to endanger his family or the public, then such magistrate may issue an order authorizing and instructing any constable, police officer or other agent to whom it may be directed, to take custody of and remove such patient to the designated place, and to incur any necessary expense in connection therewith, including reasonable fees for the removing agent, such expense to be paid by the

board requesting such removal, but the patient shall have the right to appeal to the Superior Court, as in the case of crimes and misdemeanors. After such removal, the officer or agent making the same shall file such order, with his return thereon, with the court from which it issued. The person so removed shall remain in the institution until discharged by the authorities in charge thereof; and the officer in charge of such institution shall have authority to restrain the patient therein and to enforce compliance with the rules and regulations thereof; *provided, however*, that whenever a patient shall so request, in writing, the authorities in charge of said institution shall notify the justice of the court which has taken original cognizance of the case of the desire of such person to be discharged; and thereupon, after hearing, the court may order such discharge or take such action with regard thereto as may be deemed expedient, but the patient shall have the right to appeal to the superior court, as in the case of crimes and misdemeanors, but no such request shall be entitled to consideration or action as above provided if made within four weeks after a decision on a previous request. Any authority in charge of such institution shall, upon failure to communicate the request of a patient, as herein provided, be deemed in contempt of the court having jurisdiction.

SECTION 2. In case any inmate of a sanatorium or hospital for the care and treatment of persons ill with tuberculosis persists in disobeying the rules of such institution and defying the orders of its officer, or conducts himself in such manner as to endanger the health or comfort of the other inmates, or the discipline of the hospital, the officer in charge of such institution may petition the police, municipal or district court having jurisdiction where said institution is located, and, in accordance with the provisions of the preceding section, the magistrate having jurisdiction may order the removal of such patient to any institution maintained by the state for the care and control of unruly or incorrigible tuberculous patients.

SECTION 3. If it shall appear that the patient removed under the preceding sections is able to pay the cost of his care therein, or any part thereof, the magistrate ordering the removal shall order and require the patient to make such payment, and, upon failure so to do, the board of health or officer requesting such removal, may bring civil action against the patient, in the ordinary manner provided by law, to recover the amount stipulated in the order.

SECTION 4. Any action taken hereunder shall be in nowise considered a record of crime or misdemeanor against the patient involved.

SECTION 5. This act shall take effect upon its passage.

The wilfully careless and incorrigible consumptive injures himself as well as being dan-

gerous to many others. Problems concerning such persons have been considered on a number of occasions by the Massachusetts Association of Boards of Health. A special committee of this Association has had the matter under consideration for two years, and this committee now offers as its solution the above bill and one which follows. This second bill (House 75) makes the following provisions "for the care and treatment of wilfully careless and incorrigible tuberculosis patients":

SECTION 1. The trustees of hospitals for consumptives, subject to the approval of the governor, are hereby authorized to take, in the name and for the use of the Commonwealth, land in fee by right of eminent domain or to purchase the same; and to erect and maintain on such lands, or upon lands previously taken for the maintenance of sanatoria, a hospital or hospitals for the custody, care and treatment of incorrigible and careless tuberculous patients, and for this purpose may expend a sum not exceeding \$50,000.

SECTION 2. Within sixty days after any land is taken under the provisions of this act, the said trustees shall file and cause to be recorded in the registry of deeds for the county in which such land is situated a description thereof, sufficiently accurate for its identification, together with a statement of the purpose for which the same is taken, which description shall be signed by a majority of said trustees; and such recording shall operate as a taking of the real estate therein described.

SECTION 3. The trustees of hospitals for consumptives shall, from the appropriation made for such purpose, pay all damages sustained by any person, firm or corporation by such taking under the authority of this act. Any person, firm or corporation sustaining damages as aforesaid, who fails to agree with said trustees as to the amount thereof, may have the same assessed and determined in the manner provided by law in the case of land taken for the laying out of highways, on application at any time within three years after the taking of such land in the manner above prescribed, but no such application shall be made after the expiration of said three years.

SECTION 4. This act shall take effect upon its passage.

These two bills seem entirely just, and their passage desirable; for, without inflicting unwarrantable hardship on the individual, they give to boards of health and to institutions for the care of consumptives power to take such action as is best, not only for the individual but for the community. The Committee solicits communications from any who are opposed to these measures, as well as from those who would

like to see them become laws. Any facts or suggestions in regard to the problem will be gladly received, and communications concerning them should be addressed to Mr. Seymour H. Stone, 3 Joy Street, Boston.

THE INSTRUCTIVE DISTRICT NURSING ASSOCIATION.

THE Instructive District Nursing Association has recently published a little pamphlet entitled "Public Health and Private Conscience," which deserves attention not only for its appeal for financial support, but because it is an attempt to put before the public of Boston one aspect of its public health problem, as demonstrable by the increasing demand for the services of the visiting nurse. As is stated in one paragraph, the care of public health is, or should be, a public function. Aside from its day-by-day service in the homes of Boston's less fortunate citizens, the Association recognizes a further duty—that of developing a sense of community responsibility which shall be equal to the many real social needs which the public health movement has demonstrated. The private conscience can be effective only when it is translated into terms of social and political action.

It is estimated that the actual cost of a nurse's visit is fifty-five cents. Every patient who can do so is asked to pay this fee, or as large a part of it as the state of the family finances permits. In this way the self-respect of the family is preserved, and the fees so received enable the Association to render free nursing service to a larger number of wholly dependent charges.

"The receipts from patients have steadily risen from \$1,500 in 1912 to \$6,500 in 1916. At the same time, however, the demand for free nursing has increased. Every year the budget has had to be enlarged to meet the pressing need of more nurses and more equipment, although part of the cost of this expansion has been taken care of by progressive economies in organization and administration. There have never been enough nurses to meet Boston's public health needs, for the reason that the possibilities of genuine, result-getting service are almost limitless. In 1915 the Boston Instructive District Nursing Association cared for 900 patients more than during the preceding year. More nurses are needed. More equipment is needed. Above all, there is needed a more general under-

standing of the work of the Association, its purposes and its methods.

"Twenty-five thousand dollars endows a nurse; \$1,200 pays a salary of a supervising nurse for one year; \$1,000 pays the salary of a staff nurse for one year. There are fifty nurses on the staff, and thirty of them are already supported. Of these thirty, nine are memorial nurses and twenty-one are supported by individuals, churches, etc; \$500 pays the salary of a staff nurse for six months; \$125 pays for all the work which is now being done for the non-paying, very poor patients for one day; \$75 endows one nurse for one day; \$50 pays for the care of one chronic patient for one year; \$25 pays the salary of one staff nurse for one week; \$5.50 pays for the care of one newly born baby and its mother; \$2.75 pays for pregnancy care of one prospective mother."

The idea of a district nurse was first made practicable by the Woman's Education Association in 1885 and early the following year a single nurse was employed to visit tenement homes in the South Cove District of Boston, to do regular nursing service under the direction of the physician in charge, and to give instruction in the fundamentals of hygiene, infant care, and sanitation. Two more nurses were quickly added, and so was formed the Boston Instructive District Nursing Association. The first annual report records a total of 700 cases and over 7,000 visits made. The thirtieth annual report, for the year 1915, shows a total of over 14,000 cases cared for and about 130,000 visits made. Each year's expansion has been in response to an insistent demand which has never been fully met.

Over fifty years ago, in a speech delivered in the British House of Commons, Benjamin Disraeli said: "Public Health is the foundation upon which rests the happiness of the people and the power of the state. Take the most beautiful kingdom: give it intelligent and laborious citizens, prosperous manufacturers, productive agriculture; let arts flourish, let architects cover the land with temples and palaces; in order to protect these riches maintain large standing armies, modern weapons, and fleets; however, if the population remains stationary, if the people decrease yearly in vigor and stature, that nation must perish." "That," said Disraeli, "is why I consider the first duty of a statesman is the care of public health."

PREPARATION FOR WAR.

THOUGH a considerable proportion of the American people still earnestly desire and hope for the honorable avoidance of actual hostilities and bloodshed, the fortnight which has elapsed since the severance of official diplomatic relations between the United States and Germany has been throughout the country one of quiet, but none the less genuine, preparation for the eventualities of possible war. Such preparation has been made the more desirable by suggestions of brewing trouble in Mexico and Cuba. As in preventive medicine, one of the often effective methods of averting an evil is to take intelligent measures for meeting it.

In New York, Mayor Mitchell has appointed a committee on national defence, which has already made and reported an interesting canvass of the available man-power of the nation. In this report it is computed that there are at present in the United States 30,091,564 males actively employed in all manner of pursuits, of whom 21,071,076 are between the ages of 18 and 45 years. Of these, 43.35% are single men, and 10,535,940 are physically fit for military service.

In Massachusetts a similar committee has been appointed and is engaged in summarizing the resources of the Commonwealth.

Not only military and economic, but also medical and nursing facilities are being reviewed and organized. The American Red Cross is in a state of active efficiency and readiness. Dr. Franklin B. Martin of Chicago has been appointed medical member of the Council of National Defence at Washington.

This council has appointed a medical standardization committee, which has completed its permanent organization with Dr. Frank F. Simpson as president and Dr. T. W. Richards as secretary. The executive committee consists of Dr. Richard H. Harts of Philadelphia, Lieutenant Colonel Carl R. Darnell of the army, Dr. Joseph A. Murphy of the navy, Assistant Surgeon-General Rucker, of the Public Health Service.

The standardization committee will prepare a list of medical articles and supplies for use in war time, conforming as nearly as possible to similar articles produced commercially in peace times. By this standardization it is expected to speed up production, reduce cost, and stabilize manufacture.

MEDICAL NOTES.

THE MCINTIRE PRIZE.—In 1915, Dr. Charles McIntire, after twenty-five years of faithful service, resigned the secretaryship of the American Academy of Medicine. In appreciative commemoration of his service, the Academy raised a fund whose income should be expended in the award of a triennial prize. In accordance with this plan, two prize offers are now announced, the prizes to be awarded at the annual meeting in 1918 and in 1921. The subject for 1918 is "The Principles Governing a Physician's Compensation in the Various Forms of Social Insurance," and for 1921, "The Effect of Child Labor on the Growth of the Body." The prize for 1918 is \$100, that for 1921, \$250. Essays submitted in competition for these prizes must consist of not less than 5,000 or not more than 20,000 words and must reach the secretary of the Academy on or before January 1 of the years for which the prizes are offered. The present secretary is Dr. Thomas W. Grayson, Pittsburgh, Pa.

MEDICAL SCHOLARSHIPS FOR WOMEN IN RUSSIA.—It is reported that the sum of 200,000 rubles has been given anonymously to the Higher Institute of Medicine for Women at Petrograd for the establishment of scholarships in the name of the late Count Vorontzoff.

CANCER STATISTICS.—Recently published statistics of cancer mortality show that the rate has steadily increased during the last fifteen years.

"The rate was 63 per 100,000 in 1900 and in 1914 had increased to 79.4. This is the report from the registration area, which includes approximately two-thirds of the country's population. The states having the highest rate are: Vermont, 109.9; Maine, 107.6; Massachusetts, 101.2; New Hampshire, 100.8, and California, 97.9. A part of the difference between the states having a low rate of mortality from this disease and those having a higher rate is due to the fact that the average age of the population is greater in some states having a high average, as cancer is more likely to attack those of advanced age than those in the earlier period of life. The small rate in some of the Southern States, running far below the average for the country, is believed to be due to the fact that the Negro is less susceptible than the white to the disease. The death rate for whites in the states that make returns is 80 per 100,000, while among the colored population it is only 56.2."

EFFICIENCY OF AMERICAN RED CROSS.—Report from Washington on February 9, states that in the event of war, the American Red Cross could, within a few days, mobilize a sufficient personnel and equipment to take medical care of an army of 1,000,000. On Saturday, February 1, with the severance of diplomatic relations between the United States and Germany, a call was issued to Red Cross chapters throughout the country

to place themselves on a footing for field work. Mr. Eliot Wadsworth, acting chairman of the organization, estimated that the force which could be mobilized immediately in case of war would include the following:

"Twenty-six completely equipped army and navy base hospital units, with a total personnel of 1250 nurses and 599 nurses' aids.

"A hospital base reserve of 415 nurses and 525 nurses' aids.

"Thirty-one partly complete navy detachments of 20 nurses each.

"One hundred and fifteen emergency detachments.

"A corps of expert instructors in surgical dressings, totaling about 120."

It is estimated that if 30 per cent. of those to whom the Red Cross has given training responded to the call for volunteers, the Red Cross could put in the field, 270 trained nurses, and 5000 nurses' aids. It is believed that no national emergency has ever found the National Red Cross better prepared or more efficient than it is today.

EUROPEAN WAR NOTES.

HONOR TO A BRITISH MILITARY SURGEON.—It is announced that the Grand Cross of the Order of the Bath has been conferred on Surgeon-General Sir Alfred Keogh in recognition of his services in the organization of the British Army Medical Corps during the European War. At the outbreak of the war Dr. Keogh was rector of the Imperial College of Science and Technology, but in October, 1914, succeeded Sir Arthur Sloggett in the war office where he had himself served from 1904 to 1910 and with whose business he was, therefore, previously familiar.

WITHDRAWAL OF AMERICAN RED CROSS FROM GERMANY.—Report from Berlin on February 12 states that with the severance of diplomatic relations between the United States and Germany, the American Red Cross unit of three surgeons and three nurses, which was on duty at Graudenz, Prussia, was ordered, by Ambassador Gerard to withdraw, and has already departed for Switzerland.

WAR RELIEF FUNDS.—On February 17 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$272,883.07
French Wounded Fund	196,569.22
Armenian Fund	152,758.04
French Orphanage Fund	84,188.07
British Imperial Fund	83,693.15
Surgical Dressings Fund	70,777.97
Serbian Hospitals Fund	70,682.93
Italian Fund	33,374.44
Facial Hospital Fund	25,525.67
Russian Refugees' Fund	16,932.48

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending February 10 the number of

deaths reported was 290, against 266 for the same period last year, with a rate of 19.58, against 18.24 last year. There were 42 deaths under one year of age, against 46 last year, and 113 deaths over 60 years of age, against 73 last year.

The number of cases of principal diseases were: diphtheria, 63; scarlet fever, 30; measles, 105; whooping cough, 2; typhoid fever, 3; tuberculosis, 50; smallpox, 1.

Included in the above were the following cases of non-residents: diphtheria, 8; scarlet fever, 3; measles, 8; tuberculosis, 8; smallpox, 1.

Total deaths from these diseases were: diphtheria, 4; scarlet fever, 2; measles, 1; tuberculosis, 20.

Included in the above were the following deaths of non-residents: scarlet fever, 1; tuberculosis, 2.

SPRINGFIELD ACADEMY OF MEDICINE.—The February meeting of the Academy was held at 137½ State Street on Tuesday, February 13, at 8. 15 P.M.

Dr. George D. Stewart of New York spoke on "Radiation and the Treatment of Cancer."

Academy Notes.

Attention is called to an error in the date announced for the opening of the course on cardiovascular-renal and pulmonary diseases. The first meeting was held on Friday, February 16th. The course of dental infections and arthritides began on Tuesday, February 13th.

The March meeting of the Academy will be addressed by Dr. Alfred Stengel of Philadelphia; the April meeting by Dr. Edward Martin of Philadelphia. L. D. CHAPIN, M.D., *Secretary*.

CASE OF SMALLPOX IN BOSTON.—In a recent issue of the JOURNAL we noted editorially a minor outbreak of smallpox in Connecticut and commented on the danger to the community of such preventable epidemics. Last week a case of smallpox was discovered in Boston in the person of a walking delegate of a labor union in Connecticut, who, while in the initial stages of his disease traveled from Waterbury to Cambridge and thence to Boston in the public cars. He had not been vaccinated.

THE MILK AND BABY HYGIENE ASSOCIATION.—The report of the Milk and Baby Hygiene Association for the month of January states that 2,235 babies were cared for, an increase of 154 over the corresponding month last year. Sixty-four medical conferences were held with an average attendance of thirty-two babies. Mrs. Lenah Austin Smith has been appointed superintendent of nurses to take the place of Miss Mary A. Jones, who has resigned to accept a position as superintendent of the District Nursing Association of Fall River.

The Massachusetts Medical Society.

STATED MEETING OF THE COUNCIL.

A STATED meeting of the Council was held in John Ware Hall, Boston Medical Library, Wednesday, February 7, 1917, at 12 o'clock, noon. The President, Dr. Samuel B. Woodward, was in the chair and the following 77 councilors present:

BARNSTABLE.	MIDDLESEX SOUTH (Cont.)
E. E. Hawes.	J. O. Tilton.
C. W. Milliken.	Alfred Worcester.
BRISTOL NORTH.	NORFOLK.
W. H. Allen.	T. F. Greene.
R. D. Dean.	A. N. Broughton.
F. A. Hubbard.	P. W. Carr.
BRISTOL SOUTH.	G. W. Kaan.
E. F. Cody.	Bradford Kent.
E. F. Curry.	Joseph Kittredge.
W. A. Dolan.	T. J. Murphy.
R. W. Jackson.	A. P. Perry.
ESSEX NORTH.	J. W. Pratt.
F. B. Pierce.	Victor Safford.
R. V. Baketel.	NORFOLK SOUTH.
J. J. O'Sullivan.	E. N. Mayberry.
F. W. Snow.	PLYMOUTH.
ESSEX SOUTH.	A. A. Mackeen.
Emile Poirier.	Gilman Osgood.
C. H. Bangs.	A. E. Paine.
R. E. Bicknell.	SUFFOLK.
N. P. Breed.	G. W. W. Brewster.
P. P. Johnson.	W. L. Burrage.
HAMPDEN.	H. A. Christian.
J. M. Birnie.	A. L. Chute.
T. S. Bacon.	J. A. Cogan.
M. B. Hodskins.	G. A. Cragin.
E. A. Knowlton.	E. G. Cutler.
MIDDLESEX EAST.	Albert Ehrenfried.
W. H. Keleher.	C. M. Green.
G. N. P. Mead.	W. C. Howe.
MIDDLESEX NORTH.	J. L. Morse.
J. V. Meigs.	W. H. Robey, Jr.
J. H. Lambert.	Mary A. Smith.
MIDDLESEX SOUTH.	Richard M. Smith.
W. D. Swan.	F. B. Talbot.
M. H. Bailey.	WORCESTER.
H. T. Baldwin.	G. O. Ward.
A. W. Dudley.	W. H. Delahanty.
C. M. Hutchinson.	M. F. Fallon.
A. A. Jackson.	J. O. Genereux.
S. F. McKeen.	David Harrower.
G. A. Miles.	W. L. Johnson.
C. E. Mongan.	F. H. Washburn.
Godfrey Ryder.	S. B. Woodward.
E. H. Stevens.	WORCESTER NORTH.
	E. L. Fiske.

The reading of the records of the previous meeting was omitted by vote.

The President made the following remarks:

Members of the Council:

Why it should have been ordained that accident insurance, health insurance, special council meetings, repeated and protracted conferences with special committees, should be poured on my devoted head during the last few months is one of the unsolved and insoluble problems of the times, and thus it must remain.

He who said that the Massachusetts Medical Society was asleep is no longer anxious to disclose to me his identity. I tell you that in moving about the State, I have found it awake, ready at least to criticize, not always I fear

wisely, everything and anything attempted by you and your committees. One reason for the criticism is want of knowledge of work done, owing to the shrinking modesty of the committees themselves, who far too briefly, as a rule, speak of what they have accomplished. Who thought favorably, who knew anything, I might almost say, of the work of the Committee on Ethics, until at the last annual meeting the chairman made an extended report of its activities? Who has the faintest idea of the work of the Committee on State and National Legislation, until he learns that last year one member was for six months almost daily at the State House and that the Committee, or a portion of it, met almost weekly during the legislative session, while its attendance at hearings consumed an incredible amount of the time of its members?

The Society is awake and, judging from the direction from which we most frequently hear, the enthusiasm aroused in the Middlesex villages and farms by the ride of Paul Revere has not altogether subsided. We have held a special meeting to consider health insurance, by no means the only meeting in one hundred years, as was stated by an over-enthusiastic gentleman, whose failing memory covered but a short time, for we had such a meeting in 1914, but truly an infrequent occurrence. The Society is awake, but are the individual members, all of them, ready to take hold and do what they are so ready to criticize others for not doing better? It is much easier to criticize than to lend a hand. Thirty men, out of a committee of forty, promised to find out, each in his district, the family physician of individual members of the legislature and through him, or otherwise, to impart knowledge on such medical subjects as might be thought desirable. A request to ascertain the stand taken by members of the legislature on vaccination and report results, has brought, *in two months*, responses from less than one-half of these gentlemen, and of the standing of legislators on this matter we know but little. Do not expect too much of your legislative committee if this is the measure of your support.

An active and reporting member writes me: "The family physician has failed me in nearly every instance, and I have to communicate directly with each representative and the senator."

The President referred feelingly to the loss to the Society occasioned by the recent death of Dr. Charles F. Withington, president for the last two years, and Dr. Edward M. Buckingham, treasurer of the Society for twenty years, and sketched the life of each, as he did that of Dr. Harry Pringle Robinson, late councillor from the Essex North District Medical Society.

The names of the Nominating Committee of the Society were read by Districts, and the following members responded and retired: E. E. Hawes, F. A. Hubbard, R. V. Baketel, J. M. Birnie, E. H. Stevens, T. J. Murphy, A. E.

Paine, G. W. W. Brewster, David Harrower, E. L. Fiske.

Dr. Green read the appended report of the Committee on Membership and Finance as to Membership, and it was accepted and its recommendations adopted by vote:

REPORT OF COMMITTEE ON MEMBERSHIP AND FINANCE
AS TO MEMBERSHIP.

The Committee on Membership and Finance makes the following recommendations as to membership:

1. That the following named Fellow be allowed to retire, under the provisions of Chapter I, Section 5, of the By-Laws:

Gruver, Samuel James, of Brockton.

2. That the following named Fellows be allowed to resign, under the provisions of Chapter I, Section 7, of the By-Laws:

Barry, Rolla Grant, of Worcester, (present address, State Hospital for the Insane, Columbia, South Carolina).

Blake, James Eddy, of Rosindale, (present address, Lisbon, New Hampshire).

Bresnahan, John Francis, of Roxbury, (present address, 56 Humphry St., Swampscott, Massachusetts).

Coates, Edward Augustus, of Winthrop, (present address, Army Medical School, Washington, D. C.)

Grey, Ernest George, of Roxbury, (present address, The Johns Hopkins University, Baltimore, Maryland).

Martin, Miles, of Boston, (present address, The Gregson, Santa Barbara, California).

Mills, Charles Fisher, of Framingham, (present address, "somewhere in China").

Prescott, Henry Dudley, of New Bedford, (present address, 46 Old Military Road, Saranac Lake, New York).

Simonds, Otis Franklin, of Wells Hospital, Philadelphia, (present address, 922 Rose Building, Cleveland, Ohio).

Smith, William Francis, formerly of Rutland, (present address, 14 Wentworth Court, Malden, Massachusetts).

Wiseman, John Ignatius, of Dorchester, (present address, Connecticut Hospital for the Insane, Middletown, Connecticut).

3. That the following named Fellows be allowed to change their district membership, without change of legal residence, under the provisions of Chapter III, Section 3, of the by-laws:

Boutwell, Horace Keith, from Suffolk to Norfolk.
Butler, Patrick Francis, from Middlesex South to Suffolk.

Greene, Daniel Crosby, from Middlesex South to Suffolk.

Harvey, William Wirt, from Suffolk to Norfolk.

Heffernan, David Aloysius, from Middlesex South to Suffolk.

Irving, Frederick Carpenter, from Norfolk to Suffolk.

Loder, Halsey Beach, from Middlesex South to Suffolk.

Ober, Frank Roberts, from Middlesex South to Suffolk.

Rushmore, Stephen, from Norfolk to Suffolk.

Strong, Richard Pearson, from Middlesex South to Suffolk.

Noves, Margaret Louise, from Middlesex South to Suffolk.

For the Committee on Membership and Finance,
CHARLES M. GREEN, *Chairman*.

The petition of P. S. Marie of Taunton to be restored to the privileges of fellowship was

acted on favorably by the committee to which it had been referred, and it was voted that he be restored under the usual conditions. A petition from E. F. Haines to be restored was referred to this committee: W. C. Howe, H. M. Chase, Frederick Winslow.

The President nominated and the Council appointed the following list of delegates:

To the House of Delegates of the American Medical Association for terms of two years from June 1, 1917:

Principal, F. B. Lund, Boston; *Alternate*, W. H. Robey, Jr., Boston.

Principal, E. F. Cody, New Bedford; *Alternate*, N. S. Hunting, Quincy.

To the annual meetings of the following state medical societies:

MAINE: W. E. Fernald, Waverley; E. V. Scribner, Worcester.

RHODE ISLAND: W. H. Allen, Mansfield; David Harrower, Worcester.

NEW HAMPSHIRE: E. S. Jack, Melrose; A. H. Pierce, Loominster.

CONNECTICUT: S. A. Mahoney, Holyoke; C. S. Chapin, Great Barrington.

Dr. Green presented a financial report as chairman of the Committee on Membership and Finance for the year 1916 and the report of the Auditing Committee, appointed at the October meeting of the Council, and the motion being made that this report be accepted as the Treasurer's Report, and duly seconded, it was so voted unanimously. (See end of Proceedings for report.) Dr. Green stated that he had audited the expenditures made by the President since the death of the late Treasurer, Dr. Buckingham, December 23, 1916, and had found them correctly vouched. *Voted*: That the Massachusetts Medical Society through its Council hereby confirms the payment of any checks signed by its President and drawn on the New England Trust Company since the decease of its Treasurer, Dr. Edward M. Buckingham, and up to the time of the election of a new Treasurer.

Dr. Green offered the following motion, on the unanimous recommendation of the Committee on Membership and Finance. *Moved*: That \$10,000 of the cash balance in the treasury be added to the Permanent Fund; and that the Treasurer be instructed to invest this sum in securities satisfactory to the Committee on Membership and Finance.

He explained that this portion of the cash balance might be invested so that it would bring in a greater return than at present. Dr. Mongan moved that it be laid on the table, and on being put to a vote it was placed on the table by a show of hands, 38 in favor and 24 opposed. Later in the meeting, on motion by Dr. Dolan, the sum of \$5000 was substituted for \$10,000, the motion having been taken from the table, and as amended it was passed unanimously.

Dr. Green submitted this proposed amendment to Chapter VI, Section 4, of the By-Laws:

In accordance with Chapter IX of the By-Laws, the Committee on Membership and Finance submits to the Council the following proposed amendment to Chapter VI, Section 4, defining the duties of the Treasurer:

That the fourth paragraph of Chapter VI, Section 4, be amended so that it shall read:

He shall attend the meetings of the Committee on Membership and Finance, furnish the committee with such data on membership and finance as the committee may require, and shall make all investments, and re-investments of the society's funds subject to the approval of this committee.

No action was taken.

Dr. Green offered a Budget that had been prepared by the Committee on Membership and Finance and moved its adoption as the budget for the current year. Dr. Dolan moved that it be laid on the table, but his motion was lost by a vote of 22 in favor and 27 opposed, whereupon the Budget was accepted by vote. (See end of Proceedings for Budget.)

The Nominating Committee reported the name of Dr. Arthur K. Stone, of Boston as a candidate for Treasurer. Dr. Breed put in nomination the name of G. Z. Goodell, of Salem, for that office, Dr. T. J. Murphy that of G. W. Kaan, of Brookline. A motion by Dr. Chute that the report of the Nominating Committee be accepted and the lists closed prevailed by a vote of 34 to 32, and on proceeding to ballot 74 votes were cast, 54 being for Arthur K. Stone, and he was declared elected treasurer of the Society for the unexpired term of the late treasurer, namely, from December 23, 1916, to June 13, 1917.

Dr. Reynolds presented the following report of the Cancer Committee appointed June 7, 1916, and spoke for its adoption, being followed by Dr. R. B. Greenough, another member of the committee, speaking on the fifth recommendation of the report, namely, on state-wide opportunities for free laboratory diagnosis of pathological tissue. He explained that the plan is in operation in New York State and that the Massachusetts Health Commission may be assisted by the Massachusetts Medical Society in overcoming the delays incident to getting laws and an appropriation from the Legislature, if the cancer committee works in coöperation with the Cancer Commission and the Health Commission. The report was accepted by vote of the Council and its recommendations adopted, and this committee appointed, on nomination by the President:

Edward Reynolds, *Chairman*,
J. Collins Warren,
Robert B. Greenough,
John T. Bottomley,
Edward P. Richardson.

REPORT OF THE COMMITTEE ON THE RELATION OF THE SOCIETY TO THE ANTI-CANCER CAMPAIGN.

Your Committee begs leave to report that it has given careful study to the progress of the Anti-

Cancer Campaign in this country as well as in Europe. It believes that the widespread campaign of education which has been conducted among the laity by the American Society for the Control of Cancer has been received by them with much interest and has been of good effect. It finds that several State Medical Societies, notably that of Pennsylvania, have of late years created special committees for the purpose of awakening increased interest towards the control of cancer among the medical profession also, and that the custom of appointing such committees is rapidly spreading throughout the several State Societies of the country.

It recommends:

1. That the Massachusetts Medical Society should appoint a permanent Committee of five on the control of cancer.
2. That that Committee be advised to place itself in communication with the Executive Secretary of the American Society for the Control of Cancer.
3. That it be directed to urge that each of the District Societies should for the immediate future devote one of their meetings each year to the subject of the control of cancer, accompanying that request with an offer to furnish speakers for those meetings if so desired.
4. That that Committee should be authorized to distribute to the profession in Massachusetts at the expense of the Society, but under the direction of the Committee on Membership and Finance, such educational literature as it may deem wise.
5. That that Committee be directed to use all proper efforts towards securing state-wide opportunities for the free laboratory diagnosis of pathological tissue as is already being done with excellent results in some other states.
6. That that Committee be directed to urge upon the BOSTON MEDICAL AND SURGICAL JOURNAL the expediency of constant publication of such a brief outline of modern principles in the diagnosis and treatment of cancer as may meet its approval.

All of which is respectfully submitted.

EDWARD REYNOLDS,
J. COLLINS WARREN,
ROBERT B. GREENOUGH,
JOHN T. BOTTOMLEY,
EDWARD P. RICHARDSON.

The secretary read Bill, H. R. 17851, that had been introduced into the National House of Representatives by Congressman James A. Gallivan, of Boston, authorizing the Secretary of the Treasury to expend the sum of \$250,000 on an intensive study of infantile paralysis; and also a letter from Allan J. McLaughlin, Massachusetts Commissioner of Health, favoring the bill. *Voted:* That the Council favors Bill H. R. 17851.

The President nominated and the Council appointed M. J. Rosenau and H. C. Ernst, delegates to the annual Congress on Medical Education, Public Health and Medical Licensure, at Chicago, Feb. 5, 6, 1917, to the sessions on public health and medical education respectively, and J. Q. Adams, of Amesbury was appointed Councilor in place of H. P. Robinson, deceased, for the Essex North District Medical Society. The President called for the report of the Committee of Arrangements as to the annual meeting but no representative of the committee was present.

Dr. Broughton presented a report of progress for the Committee on the Workmen's Compensation Act as follows:

REPORT OF THE COMMITTEE ON THE WORKMEN'S COMPENSATION ACT.

The Committee on Workmen's Compensation Act, appointed at the October meeting of the Council, respectfully submit the following report of progress:

The Committee have had practically weekly meetings and we feel that we have already covered considerable ground. The Committee was divided into the following sub-committees: On Legislation, Finance, Statistics, and Publicity, and the work has been carried along by these in connection with the Committee as a whole. Further, a request was made of the president of each of the district societies that a committee of five be appointed to deal solely with the workmen's compensation matters, with power to represent the district as a whole in the event that immediate action were necessary before the District Society could be called together as a whole.

The Committee have made a careful study of the main points in which the Compensation Act is unsatisfactory to all concerned, and after most careful deliberation and a consideration of the merits of numerous suggestions as to desirable changes, Senate Bill No. 135 was drafted under the guidance of Mr. A. N. Frost, of Lawrence, who was selected to give us necessary legal advice in framing the bill and as to the best method of introducing it into the legislature.

The members of the Committee have had personal communication with various members of the House and Senate, and in this part of the work we have been greatly assisted by the Auxiliary Committee of the Committee on State and National Legislation. We are particularly grateful for the support given us by the Committee on Finance, and for the cordial coöperation and interest of the President, Dr. Samuel B. Woodward.

One of our meetings was held in Worcester for the greater convenience of the men in the western part of the state. It was well attended and most successful. We feel that if nothing else has been gained, the sharing in the work and discussions of our committee by so many representative Fellows throughout the state has been of real advantage to the society as a whole in the amount of interest and enthusiasm developed.

Accompanying this report is a statement of the Committee's criticisms of the Workmen's Compensation Act as it now stands and our suggestion for its improvement, which has been sent to each member of the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society; and with this we sent also a circular letter asking for data regarding each member's experiences under this act. The replies are coming in very satisfactorily, and we hope to have some pertinent facts to set before the Joint Committee of the Judiciary at the hearing which will be held about the middle of February. In the mean time, we ask each member to do all that he can to insure the passage of this bill, emphasizing the fact that the point of first importance is that an injured workman shall receive the *adequate* treatment to which each should be entitled. With such help we hope that at the next meeting of the Council we may report its favorable passage.

Respectfully submitted,

ARTHUR N. BROUGHTON, *Chairman.*

It was moved and seconded that the Council approve the act of the President and the Committee on the Workmen's Compensation Act in introducing into the Legislature Senate Bill No. 135, and it was so voted.

The typewritten Records of the Society, Nov. 28, 1781 to June 2, 1869, and the Records of the Council July 18, 1782, to June 5, 1823, and the Charter Book, 1781-1806, all in two volumes, were at the meeting for the inspection of the Council.

Dr. Mongan spoke on the importance of conducting a campaign of education on the question of health insurance in Massachusetts and would like to have constructive legislation on this subject prepared by the medical profession; he moved and it was voted unanimously, that a committee of 23, consisting of the president and secretary of the Society, the committee of three, already a committee on health insurance, and one member to be appointed by the president of each District Medical Society, be constituted a committee on publicity and to consider the necessity for health insurance. *Voted:* That an amount not exceeding \$5000 be appropriated from the uninvested funds of the Society to be expended for the uses of the Committee of 23 on Health Insurance, and that next year an assessment in addition to the customary assessment be levied on the Fellows of the Society to reimburse the treasury for whatever money may have been so expended.

Adjourned at 2.05 p. m.

WALTER L. BURRAGE, *Secretary*.

TREASURER'S REPORT FOR THE YEAR 1916.

By reason of the demise of the Treasurer a few days before the close of the fiscal year, the Chairman of the Committee on Membership and Finance submits the following financial report, based upon the Treasurer's accounts, for the year 1916:

Balance from the year 1915\$13,457.18

RECEIPTS OF THE YEAR 1916.

Assessments paid to District Treasurers 1,141.00
Assessments paid to District Treasurers:

Barnstable	\$145.00
Berkshire	335.00
Bristol North	275.00
Bristol South	625.00
Essex North	877.00
Essex South	1,059.00
Franklin	150.00
Hampden	1,040.00
Hampshire	295.00
Middlesex East	350.00
Middlesex North	500.00
Middlesex South	2,000.00
Norfolk	2,339.00
Norfolk South	299.00
Plymouth	445.00
Suffolk	3,203.00
Worcester	1,299.00
Worcester North	404.00

\$15,640.00

Assessments paid at Annual Meeting	1,156.00
Sale of dinner tickets	735.00
Interest on Massachusetts Bonds	560.00
Interest on deposits, New England Trust Co.	109.62
Interest on deposits, Old Colony Trust Co.	157.10
Interest from Savings Banks, general account	43.38
Interest from Savings Banks, Cotting Fund.	118.65
Interest on Annuity Policies of the Massachusetts Hospital Life Insurance Co.	867.86
Trust Fund of A. B. Emmons, 2nd, and Associates	2,445.00

Total receipts of the year\$21,973.61

Total debits\$35,430.79

EXPENDITURES OF THE YEAR 1916.

President's expense:	
Travelling	\$23.40
Postage and printing	24.68
	\$48.08

Secretary's expense:	
Stamped envelopes and printing	\$219.85
Addressing circulars	15.00
Engrossing diplomas	14.50
Stenographers at annual meeting	64.50
Incidentals	35.55
	\$349.40

Librarian's expense:	
Postage, printing and express	\$56.20
Bookbinding	22.65
	\$78.85

Treasurer's expense:	
Postage, stationery, and printing	\$92.54
Clerical work	28.10
Clerk at annual meeting	10.00
Premium on treasurer's bond	37.50
Box in Safe Deposit Vaults.	10.00
Incidentals	3.14
	\$181.28

District treasurers' expense	\$1,026.16
Censors' expense	369.00
Supervisors' expense	49.18
Salaries of officers of the Society	1,325.00
Salaries of Society's editors of BOSTON MEDICAL AND SURGICAL JOURNAL	500.00
Delegates to American Medical Association meetings, travelling expenses	211.41
Committee of Arrangements (for annual meeting):	

The Copley Plaza Hotel	\$2,354.50
Cigars	116.40
Police men	30.00
Clerks	20.00
Lantern (to show slides)	20.00
Printing	8.75
Music	100.00
Incidentals	29.85
	\$2,679.50

Committee on State and National Legislation:	
Legislative Bulletin	\$10.00
Stenographer	77.40
	\$87.40

Committee on Public Health:	
Incidentals	\$5.50

Committee on Membership and Finance:	
Postage	\$2.75
Printing	3.25
	\$6.00

Committee on Ethics and Discipline:	
Printing and typewriting	\$6.35
Travelling	7.64
	\$13.99

Committee on Medical Education and Medical Diplomas:	
Travelling	\$5.75

Committee on Workmen's Compensation Act:	
Clerical service	\$2.80
Defense of malpractice suits	689.02
Rent	750.00
Shattuck Lecture	200.00
Cotting Lunch:	
February	\$52.08
June	162.00
October	64.66
	\$278.74

BOSTON MEDICAL AND SURGICAL JOURNAL .. 7,703.00

Agent for A. B. Emmons, 2d, and Associates (from Trust Fund)	646.98
Annual dividend to District Societies	4,000.00
Returns of overpaid assessments, less com- missions	14.25
Bank charges for collecting cheques	1.50
Loss on foreign cheque .....	.01

Total expenditures of the year \$21,222.80

Total income of the year	\$21,973.61
Total outgo of the year	21,222.80

Surplus of the year	\$750.81
Balance from last year (1915) ..	13,457.18

Balance January 1, 1917 \$14,207.99

The permanent investments of the Society are as follows, there having been no change in these investments during the year:

Shattuck Fund:	
Annuity policy of Massachusetts Hospital Life Insurance Company	\$9,166.87
Phillips Fund:	
Massachusetts 3½% gold bonds	10,000.00

Cotting Fund:	
Deposit in Roxbury Institution for Savings	\$1,000.00
Deposit in Providence Institu- tion for Savings	1,000.00
Deposit in Suffolk Savings Bank	1,000.00
	\$3,000.00

Permanent Fund:	
Annuity policy of Massachu- setts Hospital Life In- surance Company	\$11,253.30
Massachusetts 3½% gold bonds	6,000.00
Deposit in Franklin Savings Bank	1,074.48
	\$18,327.78

Invested funds Jan. 1, 1917 .. \$ 40,494.65

CHARLES M. GREEN,
Chairman of the Committee on
Membership and Finance.

REPORT OF AUDITING COMMITTEE.

Boston, January 24, 1917.

The undersigned, a duly appointed committee, having examined the books of the Treasurer as of December 23, 1916, find them correctly cast and properly vouched, and also that the securities called for are in the safe-deposit vaults of the Old Colony Trust Company.

(Signed) EDWARD O. OTIS,
JAMES B. AYER.

BUDGET FOR 1917.

The Committee on Membership and Finance submits, and recommends the adoption of, the following budget for the fiscal year 1917:

ESTIMATED EXPENSE AND APPROPRIATIONS.

President's expense	\$40.00
Secretary's expense	450.00
Librarian's expense	75.00
Treasurer's expense	300.00
District treasurers' expense	1,000.00
Censors' expense	375.00
Supervisors' expense	30.00
Delegates' expense to A. M. A. meetings ..	200.00
Appropriations for salaries:	
Secretary	\$800.00
Treasurer	500.00
Librarian	400.00

Society's Editor	300.00	\$2,000.00
Appropriation for rent		750.00
Appropriation for defense of malpractice suits		600.00
Estimated drafts on Trust Fund of A. B. Emmons, 2d, and Associates		700.00
Appropriation for BOSTON MEDICAL AND SURGICAL JOURNAL		9,300.00
Expense of Shattuck Lecture		200.00
Estimate for Cotting Lunches for the Coun- cil		300.00
Appropriations for Standing Committees:		
Arrangements	\$2,500.00	
Membership and Finance	5.00	
Ethics and Discipline	25.00	
Medical Education and Med- ical Diplomas	25.00	
State and National Legislation	250.00	
Public Health	75.00	
		\$2,850.00

Special Appropriation for Special Committee on Workmen's Compensation Act	\$ 1,500.00
Appropriation for Dividend to District Societies	2,500.00
	\$4,000.00

Total	\$23,200.00
Estimated income of the year ..	22,000.00

Possible deficit of the year \$1,200.00
For the Committee on Membership and Finance,
CHARLES M. GREEN, Chairman.

BERKSHIRE DISTRICT: BOYLAN MEMORIAL HOSPITAL.—A new hospital to be known as the Boylan Memorial Hospital, Inc., of Pittsfield, Mass., is just opening its doors to admit patients. It is under the management of the Sisters of Providence, who conduct several prominent hospitals in western Massachusetts. A training school for nurses, with seven pupils in residence has also been connected with the hospital. Although having a limited capacity of about twenty-five patients, it is as well equipped with all modern appliances for the work, and medical, surgical and obstetrical patients can be admitted. As no hospital staff will be formed for the present, all physicians may send and treat their own patients. The institution has been visited by a great concourse of citizens and there is promise of a rapid growth and development of the work that will call for larger quarters in the near future.

Correspondence.

INDUSTRIAL HEALTH INSURANCE: A PROTEST.

FALL RIVER, MASS., Feb. 9, 1917.

Mr. Editor:

THE apparently authentic statement having been made that the JOURNAL was about to espouse editorially the cause of Compulsory Industrial Health Insurance, drew a letter of protest from Dr. W. A. Dolan, of the undersigned committee, to Dr. Burrage in his official capacity as the representative of the Massachusetts Medical Society on the editorial staff of the JOURNAL.

The ground of protest is that the JOURNAL carries

on its front page the statement, "Official Organ of the Massachusetts Medical Society," and if it were to take the proposed stand it would not be representing, but misrepresenting a large number, if not the majority of the members of the Society. The Advisory Committee of the JOURNAL, in its praiseworthy efforts to get in touch with all the members of the Society by holding their meetings in all parts of the State, had planned to hold its next meeting in Fall River and invited Dr. Dolan to be present, which kind invitation was accepted.

The meeting took place at the Hotel Mellen, with Drs. Streeter, Bowers, Goldthwait, Jones, Osgood and Worcester present, representing the Committee; Drs. Green and Smith, editor-in-chief and assistant editor; and Mr. Gregory, manager. After a very interesting meeting, at which the experiences of the Committee in its visits to the various districts, were related, Dr. Dolan was asked to make a statement concerning local conditions, and the *esprit*, or lack thereof, existing between the members of the Society in Fall River, and those in and about Boston, and their feeling toward the JOURNAL. The Doctor, in complying with the request, stated briefly, but plainly, some of the grievances of the local men. In the first place, it was felt that the members in and about Boston did not seem alive to, or realize the needs and troubles of the members of the outlying districts, particularly the large industrial centers, and that it was time that the Society aroused itself from this lethargy and gave its assistance to these districts, according to the local conditions therein prevailing, which frequently differ materially from those in and about Boston. This point was well brought out by an incident at a meeting of the Committee on Workmen's Compensation, held recently in Worcester, when the president, Dr. Woodward, made the remark that this question "was certainly waking up the Massachusetts Medical Society"—immediately the cry, "good," and hearty applause on all sides was heard. As the membership of this committee is mostly from industrial centers, it was certainly significant. It may be of interest to note that this excellent and lively committee, which has been holding weekly meetings, is the direct result of the efforts of a few energetic members in Lowell, who succeeded in getting together in Worcester representatives from all the districts, at which a working committee of twenty-two was appointed, on which were homeopaths as well as regulars, and these twenty-two were added by the Council to a dormant committee of five already existing for some time on paper. Dr. Woodward in his stand for progressiveness has been of great help to this committee. The defeat by the Council, a few years ago, of the proposed amendment forbidding members to engage in contract work, other than federal, state and municipal, which had been strenuously urged by the physicians of Fall River, was noted as an act of antagonism to the interests of the local physicians.

In the present instance, at a meeting of the Fall River Medical Society, called for the purpose of discussing compulsory industrial health insurance, and to which all the physicians of the city were invited, after a long, thorough and earnest discussion in which the proponents of and workers for the insurance in question were bitterly yet soberly assailed, it was voted unanimously that the Society oppose in every legitimate way the adoption of such legislation, and it was further voted, that in case such a law was enacted, that the physicians of this city should refuse to sign any panel to perform the services required by the Act. The meeting requested the members of the Council from this city to present this action to the Council at its next meeting, which was done.

That the action of this meeting might be fully appreciated, it was pointed out that Fall River is the third largest city in the Commonwealth, and, in all probability, the largest cotton cloth manufactur-

ing centre in the United States, if not in the world, and that the physicians here should be fairly well acquainted with the needs and desires of the working man. The committee was further informed that the six councilors representing this district, which includes the great cotton cloth manufacturing city of New Bedford, are of one mind in opposing the proposed legislation.

Under these conditions, it does not seem wise or fair to these communities, for the JOURNAL, the official mouthpiece of the Massachusetts Medical Society, to take a stand of such hostility.

Again, such a position does not seem to be, and, as a matter of fact is not, representative of the feeling of the Massachusetts Medical Society when it is recalled that at a special meeting held for the purpose of discussing the subject, the Council voted unanimously to request the special legislative commission not to recommend any legislation this year, in order that more time might be given for the study of the entire subject.

The visiting physicians expressed themselves as being much pleased with the frank criticisms, and requested that the remarks be sent to the JOURNAL for publication.

The writer begs leave to subscribe himself,

Respectfully yours,

W. A. DOLAN, M.D.

We the undersigned approve the above communication:

George L. Richards, M.D., John H. Gifford, M.D., Thomas F. Gunning, M.D., William H. Blanchette, M.D., William A. Dolan, M.D., members of special committee of the Fall River Medical Society on compulsory industrial health insurance; and of the Massachusetts Medical Society; Arthur C. Lewis, M.D., and Alanson J. Abbe, M.D., president and secretary of the Bristol South District of the Massachusetts Medical Society.

INDUSTRIAL HEALTH INSURANCE: A REJOINDER.

Everett, Mass., February 15, 1917.

Mr. Editor:—

The letter which you publish from I. M. Rubinow, "M. D." is similar to one sent to the Boston daily papers without the title "M. D." last week.

In the first of the letter quoted in part I stated "that it would be of interest to see how some of the estimates of the *proponents* of the Young bill worked out." The estimates of 3,000,000 people benefited under the Young bill, 9 days' sickness and \$8,000,000 to pay for the needed medical services were not my estimates, but those given the Everett Medical Society by one of the committee that drafted the Young bill. My part was only to apply the needed arithmetic, with the result published. We were told that I. M. Rubinow helped the committee with the data, and I agree with him that \$30 (thirty cents) a day for sickness, that is provided with surgeons and specialists when needed, does seem cheap from a physician's standpoint. We were also told that 5% of \$24,000,000, or \$1,200,000 was expected to provide the necessary maternity benefits. Part II, Sect. 22, reads: "Maternity benefits shall consist of all necessary medical, surgical, nursing and obstetrical aid, materials and appliances, which shall be given insured women and the wives and widows of insured men." The last published report of the State Board of Health gives 2½% as the birth rate for 1914. The same rate applied to Dr. Rubinow's estimate of 2,250,000 gives 92,978 births for the whole population. If the patients were given the same care provided by either of the two larger hospitals for maternity cases in Boston, at the minimum cost of \$2.50 per day for fourteen days, the cost would be \$35.00 per patient, with free, or

only nominal medical service. \$1,200,000 divided by 35 equals 34,286—about 35% of the whole number of births in the state, and about half the sum needed under a free medical service system to meet the minimum birth rate among the protected families. The profession generally can judge whether this seems adequate to pay the physician for his part and do the other things now considered necessary under the standards of our best hospitals. The bill provides that the necessary nursing service, surgeons, specialists, hospital service, medicine and supplies shall be furnished to the insured and the dependent members of his family. If there were only six days' sickness for 2,250,000 population, "Dr." Rubinow's estimate, the estimate would provide \$.60 a day; if there were ten days' sickness it would provide \$.355 a day. The expense in Leipzig of 7 1-3 office calls, less than two home calls per family of insured, hardly fits the situation in Massachusetts. The general practitioner finds most of his patients sick in bed rather than waiting for him in his office. There are other estimates that need revising to fit Massachusetts conditions. There are many facts available, and if we are going to consider this proposition seriously let the medical men of Massachusetts find them and apply them.

Personally, I think it cruel to expect "Dr." Rubinow, of 131 East 23rd street, New York City, to respond to night calls for information from Massachusetts.

GEO. E. WHITEHILL, M. D.

Miscellany.

SOCIETY NOTICES.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-seventh meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, February 23, 1917, at 8.15 P.M. The following papers will be read:

1. Certain Aspects of Epilepsy in Children,
George Clymer, M.D., Boston.
2. Hemorrhagic Conditions, with Especial Reference to Purpura,
George R. Minot, M.D., Boston.
Discussion opened by Beth Vincent, M.D., Boston.
3. Iliac Adenitis and Abscess,
Charles J. Mixer, M.D., Boston.
4. General discussion of Health Insurance.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*.

RICHARD M. SMITH, M.D., *Secretary*.

THE HARVEY SOCIETY.—The seventh lecture of the series will be given at the New York Academy of Medicine, 17 West Forty-Third Street, on Saturday evening, February 24, at 8.30 o'clock, by Professor John R. Marlin, Cornell University. Subject: "The Metabolism of Mother and Offspring before and after Parturition."

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at Masonic Temple, 171 Warren Street, Roxbury, Tuesday, Feb. 27, at 8 P.M., sharp. Business; Communication: "The Clinical Significance of Test of Renal Function." James P. O'Hare, M.D.; Discussion by William C. Quinby, M.D.

BRADFORD KENT, M.D., *Secretary*.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Meeting for medical improvement at United States Hotel, Boston, Thursday, March 1, 1917, at 11.30 A.M.

Reader: Henry F. Hewes, M.D., of Boston, for Joseph Chase, Jr., M.D., of East Weymouth. Subject: "Points in the Diagnosis of Diseases of the Stomach, Duodenum, Intestines and Gall Bladder."

F. H. MERRIAM, M.D., *Secretary*.

APPOINTMENTS.

DR. EDWARD R. MAGUIRE of Buffalo, N. Y., has been elected to succeed the late Dr. Roswell Park as professor of surgery in the Medical Department of the University of Buffalo.

TUFTS DENTAL SCHOOL.—Dr. William Rice has been appointed dean of Tufts Dental School, where he has been professor of operative dentistry since 1914.

RECENT DEATHS.

WILLIAM MABON, M.D., superintendent of the Manhattan State Hospital, New York, N. Y., died there on February 9, of pneumonia. He was born in New Durham, N. J., in 1860, the son of the Rev. William V. Mabon. He was graduated from the Bellevue Hospital Medical College, and later became superintendent of the Bellevue Hospital. Prior to his appointment to the Manhattan State Hospital, Dr. Mabon was president of the State Commission on Lunacy. He had been superintendent of the Manhattan State Hospital since 1906, and had a wide reputation as an alienist.

MARY MONOGHAN, M.D., of Waltham, Mass., died at her home on February 7. Dr. Monaghan was born in 1872, graduated from Lowell High School, and entered the Massachusetts College of Pharmacy. She left this school in her junior year to enter Tufts Medical College, from which she graduated in 1912, and began practice in Waltham in 1914. She was a member of the American Medical Association and the Waltham Medical Club.

FRANK E. ALLARD, M.D., a Boston physician, died at his home in Wellesley, Mass., on February 4, at the age of 54 years. Dr. Allard was born in Wheelock, Vermont, and graduated from Dartmouth in 1885. The next four years he was principal of the Boston Farm School. He received his degree of M.D. from Boston University Medical School in 1892. He was associated with a number of life insurance companies, having held the office of president of the American Association of Medical Examiners. He taught in the Medical School of Boston University and was a member of Massachusetts Homeopathic Society, the American Institute of Homeopathy and the Boston Homeopathic Society. He is survived by his widow and one daughter.

DR. OSWALDO CRUZ, director of the Oswaldo Cruz Institute of Pathology and Bacteriology, died recently at Rio Janeiro. Dr. Cruz was formerly director of the Brazilian Sanitary Service, and was widely known as a bacteriologist.

ROBERT MARSHALL WHITE, M.D., of Dorchester, Mass., died of pneumonia at his home recently. He was born in Gloucester, Mass., in 1878, and graduated from Tufts Medical School in 1909. He served as interne two years in St. John's Hospital in Providence and one year at the Lying-in Hospital in New York City, and had practised his profession in Dorchester for the past four years. He is survived by his widow.

HENRY DWIGHT HOLTON, M.D., who died on February 12, at Brattleboro, Vt., was born in 1839. He was formerly president of the American Public Health Association, and was for many years secretary of the Vermont State Board of Health. In 1902 he was a delegate from the American Medical Association to the International Medical Congress at Brussels.

ASA STONE COUCH, M.D., formerly president of the Homeopathic Medical Society of the State of New York, died in New York City on February 1, at the age of eighty-four. Before going to New York Dr. Couch had lived for many years in Fredonia, N. Y. He had taught anatomy in Chicago and Philadelphia and was one of the organizers of the New York State Hospitals for the Insane at Middletown and at Tonawanda.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

March 1, 1917

THERAPEUTIC AND PREVENTIVE MEDICINE		BOOK REVIEWS	
THOUGHTS ON THE TREATMENT OF PNEUMONIA. By Everett A. Bates, M.D., Springfield, Mass.	293	The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago. Edited by F. G. Skellern, Jr., M.D.	323
ORIGINAL ARTICLES		A Leyden's Handbook of Medicine. By Richard C. Cabot, M.D.	323
INTESTINAL TOXEMIA AND SEQUELAE. By William E. Preble, M.D., Boston.	296	Constipation, Obstipation and Intestinal Stasis (Auto-intoxication). By Samuel G. Cant, M.D.	324
TRENCH-FOOT. By H. M. Frost, M.D., Boston.	301	Geriatrics, the Diseases of Old Age and their Treatment. By L. L. Nascher, M.D.	324
ILEOSTOMY FOR ILEUS AND GENERAL PERITONITIS. By John W. Lane, M.D., F.A.C.S., Boston.	304	Preventive Medicine and Hygiene. By Milton J. Rosenau, M.D.	324
"CONSTITUTIONAL" VERSUS "LOCAL" SIGNS AND SYMPTOMS IN THE DIAGNOSIS OF EARLY PULMONARY TUBERCULOSIS. By John B. Hawes, 2d, M.D., Boston.	307	A Manual of Therapeutic Exercise and Massage. By C. Hermann Bucholz, M.D.	325
MORPHINE-ATROPINE, PIPUTRIN AND ETHER IN OBSTETRICS. By John F. Martin, M.D., Boston.	310	Operative Midwifery. By J. M. Munro Kerr, M.D.	325
CLINICAL DEPARTMENT.		Blood Pressure. By Francis Ashley Faught.	325
SUCCESSFUL USE OF INTERNAL SPLINTS IN A SEPTIC COMPOUND FRACTURE. By Peirce Henry Leggett, M.D., Boston.	311	EDITORIALS	
MEDICAL PROGRESS		PROPOSED AMENDMENTS TO NURSES' REGISTRATION LAW.	326
PROGRESS OF SURGERY, 1916. By J. B. Blake, M.D., Boston, and F. H. Lahey, M.D., Boston.	313	INDUSTRIAL HEALTH INSURANCE.	327
SOCIETY REPORTS		ARMY MEDICAL CORPS EXAMINATIONS.	328
THE PHILADELPHIA COUNTY MEDICAL SOCIETY: DEPARTMENT OF PUBLIC HEALTH AND CHARITIES: CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA, OCTOBER 27, 1916.	317	MEDICAL NOTES.	328
BOSTON ASSOCIATION FOR RELIEF AND CONTROL OF TUBERCULOSIS.	318	OBITUARY	
BOSTON SURGICAL SOCIETY.	322	ALBERT GEORGE BLODGETT, M.D.	330
		CORRESPONDENCE	
		THE ANSWER TO THE MEDICAL PROBLEM IN HEALTH INSURANCE. Frederic J. Cotton, M.D.	330
		PROPOSED AMENDMENTS TO NURSES' REGISTRATION LAW. Charles H. Cook, M.D.	331
		A CASE OF CYCLOCEPHALUS. Gaetano Praino, M.D.	332
		MISCELLANY	
		NOTICES, RECENT DEATHS, ETC.	332

Therapeutic and Preventive Medicine.

THOUGHTS ON THE TREATMENT OF PNEUMONIA.*

By EVERETT A. BATES, M.D., SPRINGFIELD, MASS.

THE name pneumonia has the same terrifying sound to me now that it had 27 years ago when in hospital wards we saw first its violence, its swift progress and its mortality, in spite of the best efforts of thorough clinicians and competent therapeutists.

It had its own way then,—it has its own way now; at times mild, short in its course and necessitating at or near the crisis and recovery, moderate circulatory stimulation,—too often its tumultuous symptoms present a picture that makes the heart ache in recognition of an impending fatal condition, in which the steady, hopeful attention of those in attendance have been rewarded only by defeat.

In a consideration of the treatment of this most important of the acute infections, whose victims number about 10% of the total mortality, I feel that you will be interested in an article by Dr. H. M. Hughes, from the Guy's Hospital reports in 1842, a synopsis of which I will give,—at that time the plan adopted for many years in the treatment of acute pneumonia had been, first, to bleed the patient to approaching syncope; then to administer a pill made up of opium gr. 1-2, tartrate of antimony gr. 1-4, and

calomel gr. i or ii every 3, 4 or 6 hours; with this was given generally a saline mixture containing from minims xx to xxx of wine of antimony; after a few hours or the next day, the symptoms remaining unsubdued, or returning after temporary abatement, the bleeding was repeated; a third venesection was sometimes deemed necessary, and even now and then a fourth occurred—but was rare. Often the abstraction of blood 4 to 6 oz. by wet cupping was thought best, if symptoms did not lessen, and the strength of the patient had been evidently diminished by the first bleedings. The drugs mentioned were continued until the effect of mercury in the mouth was observed, unless of course the patient improved,—tolerated and lived through his treatment, we might say,—when the interval of dosage was lengthened; later in the disease, after the effects of blood-letting and salivation had been noted, blisters of the true epidermis lifting type were used with "good results."

Dr. Hughes also adds this little thought to his words upon routine treatment: "I have indeed not unfrequently been desirous of trying the pure antinomial, or as it has been called the 'contrastimulant' plan of treatment; but in so important a disease as pneumonia, in the proper management of which the life of the patient is frequently involved, I have not felt justified in discarding means which I have so often myself seen effectual to cure, and adopting other means, the results of which are based solely on the reports of others."

I fear I cannot write with the same degree of confidence. But there came in England, in

* Read before the Franklin District Medical Society, January 9, 1917.

the 5th and 6th decades of the last century, a great revulsion of practice against the so-called "antiphlogistic" and in favor of the "corroborant" treatment of inflammations and acute diseases generally; and about this time or a little later the use of "heroic doses" of alcohol was advocated and became the vogue, continuing in favor into the hospital days of some of us, for it was not uncommon to order in a severe pneumonia (not necessarily an alcoholic) an ounce of whiskey hourly.

By 1891 Pye-Smith of Guy's Hospital, in his edition of Fagge's Principles and Practice of Medicine (which Dr. F. C. Shattuck then believed the best work published upon this subject) states his belief in the "expectant" plan of treatment; to use his words,—“not in the sense of doing nothing for the patient, but of putting him in the best circumstance for recovery when the malady has run its course, and watching for any unfavorable symptom, so as to meet it when it appears.” He adds: “the writer has employed venesection in a suitable case without preventing death,—has used cold baths without doing harm and with doubtful effect upon the course of the disease,—has given aconite from the beginning without in the least altering the rise of temperature or averting serious complications,—and has seen quinine, antimony, wine and brandy all in turn prove useless to check the progress of the disease.”

Since then in the past 25 years we have seen the rise of the advocates of the guaiacol treatment, the massive dose, early digitalis treatment, the enthusiastic devotees of the out-of-door air treatment, the routine camphor treatment, the double salt of quinine and urea treatment, and more recently the methods of vaccine and serum therapy applied.

With each and all our hopes of being able to conquer, where undoubtedly to conquer was most essential, have been shattered.

Seven years ago I tried out the pneumococcus vaccine treatment in 17 cases of pneumonia, getting an autogenous vaccine in each case from the laboratory of the Tufts Medical School; and, starting with enthusiasm, saw it fail in those cases where it was most needed,—namely, the very sick and the fatal cases.

With pneumococcus sera I have had no experience; they seem to have, according to report, some bactericidal value given very early in the disease, earlier than most of us can make our diagnosis.

According to our present knowledge, it would seem necessary in our thoughts on the treatment of pneumonia, to bear carefully in mind the action of the toxic agent of the infecting organism; the therapist is of course not limited to the use of drugs; essentially and beyond question the elementary principles that apply to the husbanding of strength—a proper food supply and a full and sufficient air sup-

ply—have the same important bearing in this disease as in all other acute diseases, and need not be specially discussed.

The phenomena of the action of the toxic agents of lobar pneumonia give symptoms which show in mild cases the evidence of a moderate stimulation of the central nervous system and the heart muscle, and in cases of severe intoxication or toxæmia give a picture of intensified stimulation, leading to exhaustion from over-stimulation, or early and primary general enfeeblement; there is obviously, in addition, the mechanical embarrassment to respiration and circulation due to the engorged and solidifying lung, all of which may lead to a respiratory insufficiency ending in the added toxæmia of a slowly progressive asphyxiation, or in the exhaustion and paralysis of an over-stimulated, overworked respiratory center;—and, in circulatory insufficiency,—which quickly leads to the accumulation of toxic agents, a dilating heart, oedema of the lungs, and a complete exhaustion of the cardiac muscle.

With these thoughts in mind we should be led in the early case to freeing the digestive tube of its undigested and unabsorbed residue, by means of a mild, thorough cathartic; and I am inclined in many cases to employ catharsis, especially if anything like distention appears to offer an embarrassment to respiratory or cardiac action. A distended belly is as serious and bad an omen as in typhoid and demands the usual resources at our command to control it; whites of eggs only for nourishment; strychnia clearly is indicated for its stimulating effect upon the splanchnic system; eserine, so valuable in the intestinal paresis following abdominal operations, is valueless in pneumonia, where vaso-motor dilatation and engorgement of the abdominal vessels is the factor to be combated.

When not contra-indicated as mentioned above, it stands to reason that in the selection of food for the pneumonia patient,—while it is not quite so important to feed fully as in some of the febrile diseases of longer duration,—some combination of liquids will abundantly nourish, while others mean an insufficient aid to tissues where rapid retrograde processes are active. Four glasses of milk,—two of them containing extra cream and sugar,—two cups of gruel, two of cream soup and two egg-nogs will furnish an abundant caloric value for a person weighing 150 pounds. Animal broths, on account of their low food value, I would omit. An attempt should be made in addition to the nourishing liquids to keep the urinary output well up by the giving of water; and a daily urine chart is essential in pneumonia as in all infectious diseases, not only as an index of eliminative action, but also as a hint of blood pressure. Fever need not be taken into account unless there is hyperpyrexia, when a bath of water and 40% alcohol, equal parts, at a temperature

of 75° to 80°, is indicated as in all febrile conditions with temperatures of 104° or thereabouts; temperatures themselves may reasonably be considered to play some part in nature's therapeutic processes; and certainly in a short disease like pneumonia seldom need combating; in fact one feels happier and safer in pneumonia if his patient runs a good steady temperature around 103°—the low temperature pneumonias being notoriously of the low leucocyte count, exhausted, critical type. With high temperature, cyanosis or pallor, and cold extremities the hot bath is naturally chosen in place of the cold.

Pain should always be relieved; as the common pleuritic type, if present, not only exhausts, but by diminishing the respiratory excursion lessens blood aeration and promotes early toxæmia; at times cold, again heat locally, and always morphine, gives relief; some authorities give first place to leeches, but I cannot speak personally of this method; the parallel scars upon the backs of many young aliens from the southern nations of Europe are evidence of the continued popularity in places of the artificial leech or wet cup.

For restlessness, insomnia and delirium—always alcohol for the alcoholic (and to this class in pneumonia belong those who consider themselves very moderate in their use of alcohol), sponging and opium for all; bromide is too slow and the later coal tar derivative hypnotics too uncertain and not free from the suspicion of being depressants. To the use of opium there was formerly much objection, for fear of undue slowing of the respiration and of blocking kidney efficiency; but I believe the value of its conservative use in pneumonia cannot be overestimated; certainly when there is excitation and over-stimulation of the center of respiration, some form of opium should be frequently repeated; as a working rule, a respiratory rate of double the normal calls for a respiratory sedative.

In a suspected pneumonia seen immediately after its onset, there is nothing so good as Dover's powder, and the least depressing of the coal tar sudorifics—or sweet spirits of nitre; the excited circulation is quieted and the resultant sweating probably helpful from the eliminative standpoint.

A consideration of blood-letting in certain robust, plethoric patients, where the right heart is suddenly staggered by an extensive pulmonary engorgement, must be mentioned; I have advised venesection in but two cases—pneumonia in pregnancy, notoriously fatal; there was only temporary relief.

The phenomenon of leucocytosis—and the activity of nature's warriors, the leucocytes, in those cases presenting a most favorable prognosis—brings up the question of the use of certain drugs in routine practice: experimentally creosote, guaiacol and iodine increase leuco-

cytes. W. H. Thompson of New York speaks enthusiastically of the value of creosote carbonate; at one time I followed his suggestion where renal hyperæmia was not too marked, but, using 5 to 10 grain doses every 3 or 4 hours, instead of the 15 grains advised, I found that the kidneys quickly showed signs of irritation. Guaiacol is universally condemned; and iodine I believe of value only in an accompanying bronchitis with tenacious sputum.

The routine use of alcohol in pneumonia cannot be favored, except in the alcoholic, or where in digestive failure it is needed for its caloric value; with the dry brown tongue of an exhausting toxæmia, a few doses often improve the situation.

The use of strychnia too as a routine may, it seems to me, be harmful by over-whipping an already overworked respiratory center and so hastening a respiratory exhaustion.

Oxygen does at times bring intervals of relief to the sufferer, but it cannot affect the elimination of CO₂.

With sweating and collapse, empty vessels and a struggling heart, the saline injection is certainly most valuable in tiding over the emergency, which too demands the consideration of atropine.

However, it is to the heart in pneumonia that our thought is constantly and repeatedly turned; as long as the heart is doing its work satisfactorily we may attend to the maintenance of the patient's strength and the elimination of waste, but our observation must never grow lax of the mechanical and toxic effects of the disease upon the circulation itself.

The quality of the muscle sound, and the relative snap of the aortic and pulmonic notes should be closely watched; heart muscle stimulants being clearly required when the pulmonic second sound gets faint or distant.

The pneumonic pulse is a very hard pulse by which to judge of early falling blood pressure; and sometimes respiratory insufficiency and pulmonary oedema are already in existence before the average nurse can detect palpably the lowering blood tension and give a warning which is too late.

The treatment of an established, overwhelming cardiac toxæmia is most discouraging; and the study of how to recognize early its threatenings and how to offset its onset necessitates the use of such methods as bring as exact a knowledge as possible of vaso-motor conditions; bacterial poisoning of the vaso-dilating centers means reduced blood pressure; cardiac and vaso-motor paralysis go hand in hand.

In addition to a slowly rising pulse, and diminished urinary output, together with a painstaking study of the heart sounds in connection with the pulse,—the study of the blood pressure by means of the sphygmomanometer gives an added sense of definite circulatory information, and is an unerring index in antici-

pating when cardiac toxæmia has progressed to a point demanding circulatory stimulants. An advance knowledge of what the blood pressure is under normal conditions in the individual is helpful; for what might be called a good blood pressure may be a low one relatively if arteriosclerosis is in evidence. Therefore the working rule that active stimulation must be instituted whenever the blood pressure figure falls to the pulse rate or lower, is exact only in cases with reasonably low normal pressure. Any sudden or great fall in pressure is of course a bad omen.

Of the circulatory stimulants members of the digitalis series are our mainstay. Alcohol is not a circulatory stimulant; nor strychnine, because as a vaso-motor stimulant, except in large doses, it has too little effect in an approaching circulatory crisis upon the vessels most involved in this disease,—namely the splanchnic area. Caffeine sodium benzoate in 1-2 to 1 grain doses, on account of its bracing effect, is good always in pneumonia; in a crisis the dose must be 2 to 3 grains, and with camphor may tide over a short danger period; an ampoule of pituitrin hypodermically can also be added to our emergency armamentarium.

From observation I have found that too often the case is almost hopeless when camphor is used, the mischief, myocardial insufficiency, having been in existence for hours, although sudden cardiac dilatation does occur. In this latter class of cases where digitalis has not previously been given, A. K. Stone has spoken enthusiastically of the intravenous use of strophanthin; I cannot testify to its value, for where I have felt it might do good, I have feared to use it on account of the possibility of heart-block, digitalis having been previously used. I thought at one time that the subcutaneous use of adrenalin soln., 1 to 1000, gave effective aid; until someone proved that its effect was purely local about the point of injection, and its intravenous use only of value; I believe its hypodermic use has still its advocates.

The ammonium compounds are often given empirically as expectorants, although more generally symptomatically as when expectoration ceases or diminishes; but inasmuch as these signs represent flagging pulmonary circulation requiring a circulatory stimulant we cannot place much reliance upon them.

Unfortunately, when facing a circulatory crisis, we find in digitalis a slow-acting drug requiring from 25 to 75 hours for its full action; and in pneumonia it is obviously out of the question to wait so long for results;—and this puts all the more strikingly an emphasis upon early recognition of falling blood pressure. A dangerous and difficult drug to use, I believe that in pneumonia, when indicated, digitalis has no substitute, and that it should be given earlier than is the usual custom—one, two or three doses at proper intervals, thus anticipating if

the blood pressure gives the hint, what will surely happen the next day or the day following.

A physician should use whatever form of digitalis he is accustomed to use, with the action of which he has become familiar. Some of you know my own enthusiasm for the preparation—"Digipuratum," and more particularly where quick action is desired in the intramuscular injection of the liquid digipuratum.

I have noticed in using the latter that the effect appeared in the pulse during the third or fourth hour, and was sustained generally as long as 18 hours.

In closing may I quote from another:—"No disease demands for its conscientious treatment greater sacrifice from the physician and nurse during a limited period, none greater persistence, none greater judgment. No case is so light that it may not ultimately offer a grave prognosis, none so grave that it may not yield and finally recover."

Neither, in our coming and going among our patients, should we lose sight of the thought of prophylaxis; for many tracheitis and bronchitis attacks are due to one of three or four forms of pneumococci, and a more general examination of sputum in these cases would warn physician and patient of a hidden unknown possibility of air cell invasion.

Original Articles.

INTESTINAL TOXEMIA AND SEQUELAE.*

By WILLIAM E. PREBLE, M.D., BOSTON.

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Scope of Paper. One of the most important problems that has in recent years engaged the attention of the medical profession is that of the formation of poisons in the digestive tract, the results thereof, and the treatment therefor.

The literature on the subject is voluminous. This paper is intended to present some of the main features of the problem with some of the more important evidence recently brought out.

Historical. In 1887, Bouchard¹ advanced his theories on auto-intoxication from the intestinal tract. Food poisoning, internal strangulation, and infections, such as typhoid and cholera, were all comprehended by him as auto-intoxications of intestinal origin.

Metchnikoff² was the real founder of what we might call the "school" of intestinal toxemia. His idea that the colon was simply a breeding place of pathogenic bacteria which caused most of the ills of mankind, and which could be sue-

* Read before the Bristol South District Society at New Bedford, Nov. 9, 1916.

cessfully combated by the Bulgarian bacillus, is now an exploded theory.

Stasis—Ptosis—Toxemia. The man to whom we owe the most for his work on this whole subject is undoubtedly Sir Arbuthnot Lane. Whatever we may think of his conclusions, his name will go down in medical history as the man who focused the attention of the medical world on the whole matter of stasis, ptosis, and toxemia in the digestive canal.

According to Lane,³ the primary factors are mechanical. The process begins with overloading of the large bowel, especially of the cecum and ascending colon, due largely to the erect position, and exaggerated by corsets and defecation in the sitting position. Stagnation in the cecum, with distention and descent into the pelvis follow, and adhesions form across appendix and ileum in an attempt to hold the cecum in position. The strain on the ascending colon and hepatic flexure makes it difficult for fecal matter to pass, and adhesions form to hold the bowel in place. These contract, pulling the hepatic flexure up higher than normal. The same process takes place on the left. The transverse colon sags, drags on the stomach, and pulls it down, and adhesions form about the pylorus, duodenum, and gall-bladder. The sigmoid becomes distended, shortened, and straightened, or much distended in the middle and caught at both ends by adhesions.

The adhesions across the ileum, a few inches from the cecum, hold up the ileum at a sharp angle, forming the famous Lane's kink. The whole process of adhesion formation has its origin in strain and the resulting "crystallization of lines of strain."

The stagnation in the bowel causes abnormal putrefaction of the contents, and "the absorption of toxic material produces a degenerative change in all the structures of the body." The last statement is rather sweeping, and, if true, much of the illness to which mankind is heir is caused primarily by stasis in the bowel. The following list of diseases and conditions due directly or indirectly to stasis is taken from the writings of Lane, Watson,⁴ and Charles H. Mayo:⁵ Appendicitis, arteriosclerosis, arthritis, carcinoma of ovaries, cholecystitis, circulatory disturbance, colitis, constipation, curvature of spine, cystic degeneration of ovaries and breasts, diarrhoea, endarteritis, epilepsy, foul perspiration, floating kidney, gall-stones, gastric and duodenal ulcers, gingivitis, gout, interference with respiration, intestinal obstruction, loss of sexual desire, loss of control of temper, loss of vitality, mastitis, migraine, muscular atrophy, neuralgia, neurasthenia, pancreatitis, pharyngitis, pigmentation of skin, pyorrhoea, renal disease, tuberculosis, uterine versions and flexions, visceral ptosis, volvulus.

If it is true that all of the above are primarily due to ileal and caecal stasis, extirpation of the large bowel in all children before the age

of, say, 10 years, would seem to be conservative surgery.

Before adopting this course as a universal procedure, let us consider some of the other theories as to the cause of ptosis and stasis and their sequelæ. In 1913, Kellogg⁶ of Battle Creek published his papers attempting to demonstrate that practically all of Lane's list of diseases, with a few more added, are due to incompetency of the ileo-caecal valve, allowing reflux of the contents of the colon into the ileum.

The obvious surgical treatment is to tighten up the valve a bit, and prevent the reflux. This would seem to be much simpler than Lane's short-circuiting operation, and if Kellogg is right in his theory, his operation would seem to be the one to adopt as a universal panacea, especially as Kellogg rather broadly intimates that Lane's kink, itself, is due to incompetency of the ileo-caecal valve.

But, in 1913, Martin⁷ of Philadelphia shows us that Lane and Kellogg are all wrong; that the primary cause of all this trouble is *stenosis*, or stricture, of the ileo-caecal valve, causing retention of the waste products of digestion in the ileum, and that in certain cases the valve opening should be enlarged, by a simple surgical operation, which he describes. So far, all agree that the primary seat of trouble is in the region of the ileo-caecal valve; but Case, Kellogg's roentgenologist, who is also a surgeon, stated in a paper which he read in Chicago recently that many of the abnormalities shown by x-ray to exist in the right abdomen were really due to obstructive conditions in the sigmoid. This is rather discouraging, as Case and Kellogg were co-workers on the original papers demonstrating that the primary cause of intestinal toxemia and its sequelæ was incompetency of the ileo-caecal valve. So, to date, we have Lane with his theory of stasis from gravity, with "crystallization of lines of strain"; Kellogg with his incompetency of the ileo-caecal valve; Martin with his stenosis or stricture of the ileo-caecal valve; and Case with his new theory of obstructive conditions in the sigmoid, all advancing a different primary cause for the direct production of intestinal stasis, ptosis, and toxemia, and all giving approximately the same list of pathological conditions as sequelæ.

Other Theories. While reviewing the literature on this subject, I thought it would be interesting to look into the matter from other angles. Taking the above-mentioned group of diseases, I made a hasty review of the recent literature to find other theories concerning the primary cause of arthritis, gastric ulcer, tuberculosis, epilepsy, etc. I found that according to Keith⁸ intestinal stasis is always secondary to a neuro-muscular disorder of the bowel, beginning with a degeneration of the sympathetic nerves.

Beveridge⁹ thinks the internal secretions of the ductless glands may play an important part

in the production of intestinal putrefaction and its sequelæ.

Goldthwait¹⁰ elaborated a theory in his Shattuck Lecture last year that is deserving of some attention. He ascribed anatomic and mechanistic causes for practically the same list of diseases that Lane has given, with a few additions, such as goitre, eye trouble, mental disease, diabetes, and race degeneration. According to Goldthwait, anatomic anomalies in the skeleton and improper posture result in pressure on various organs, causing a multitude of troubles, many of which may be relieved or cured by a change in posture. He makes some very sweeping statements. For instance, speaking of epilepsy, he says, "one occasionally sees convulsions stop instantly by mere change of position." Speaking of diabetes, he says, "... one has seen cases in which after most careful dieting the sugar has persisted, and then after supporting the organs properly the sugar has wholly disappeared." The number of cases in which this has occurred is not stated, nor are any other details given. He does not state whether the "careful dieting" in these cases was under the direction of a competent internist, or was prescribed by an orthopedic surgeon. Neither does he give us any hint as to what classes of these patients yield to his treatment, and what classes require bromides and dieting.

For my part, I must confess that, even after reading articles by Bean,¹¹ Goldthwait, and Bryant,¹² personally I cannot always correctly diagnose even the type—carnivorous, normal, or herbivorous—to which a given individual belongs. When we see a thin, stoop-shouldered, dark-haired 90-lb. girl of 19, with prominent ears and eyes, thin lips, and undeveloped breasts, we can, of course, immediately say, "carnivorous." But many girls of this type weigh 180 at 45, and the ears and eyes do not seem so prominent, the lips so thin, nor the breasts so undeveloped. Presumably the correct method of diagnosis now would be to count her vertebrae; if this is not conclusive, open her abdomen and measure the length of her intestine. We are then in a position to feed her according to type.

Adami¹³ in 1899 wrote very instructively on "Latent Infection" and "Subinfection," and again in 1914 wrote a very exhaustive article on "Chronic Intestinal Stasis," taking the view that low-grade infections are the primary causes in most of the same much-discussed group of diseases that we have mentioned. Since 1911, Billings,¹⁴ Rosenow,¹⁵ and others have written at length on focal infection as the cause of arthritis, appendicitis, gastric and duodenal ulcers, and many other of the diseases in the above group.

We have, then, a more or less well-defined group of some forty to fifty diseases and morbid conditions, of unproved etiology, and about a dozen men of experience and standing in the

profession, each advancing some one condition as the primary cause of all the diseases, and each presenting series of cases and clinical evidence to prove his contention. It is obvious that they cannot all be right. Let us see what other evidence we can find to shed light on the subject.

Toxins and Theories of Toxins. Adami¹³ and others have written on the subject of the formation of toxic products in the intestinal canal.

Toxins formed in the bowel may conceivably be of four types:—(1) Products of disintegration of foodstuffs by the digestive juices. (2) Products of the disintegration of foodstuffs by bacterial activity. (3) The ectotoxins discharged by the intestinal bacteria. (4) Toxins from dead bodies of bacteria.

In regard to the first type, peptones, proteoses, etc., from proteid digestion, are toxic only when introduced directly into the blood or tissues, and are not absorbed unchanged by the healthy bowel. Furthermore, these substances when introduced into the blood stream give symptoms of anaphylaxis, and do not produce the symptoms of the disorders enumerated above. Neither do the carbohydrates and fats form substances that give the above symptoms.

Considering the products of bacterial activity on foodstuffs, the experimental evidence during the past twenty-five years is rather disappointing. Certain poisonous substances are formed, such as putrescine and cadaverin, but in such small quantities as to be negligible; cholin and neurin have not been sufficiently investigated to prove much; phenol, skatol, indol, and cresol—derivations of tryptophan—may cause headache, fatigue, and general malaise, according to Hertter, but even this is not proven. Furthermore, these substances are not easily absorbed by the large intestine, and, when absorbed, are speedily oxidized and form harmless combinations with the sulphuric and glycuronic acids of the blood, and are excreted by the kidneys as conjugated sulphates and glycuronates (Howell¹⁶). It is now known that all proteids are broken down into their constituent amino-acids in the bowel and absorbed in this form (Folin¹⁷). The end products of one kind of proteid are no more poisonous than those of any other kind (Vaughan¹⁸).

Considering now the third possibility,—the ectotoxins of the bacteria themselves,—one finds that the colon bacillus and the streptococcus, the two most common inhabitants of the tract, do not produce ectotoxins. The *B. botulinus* and *B. pyocyaneus* are the only known invaders of the bowel that form ectotoxins which produce symptoms of intoxication (Adami). Furthermore, the split products of the bodies of the bacteria are the same as the split products of other proteids (Vaughan). We seem to be at a standstill, as far as finding chemical or bacterial toxins that will cause the symptoms and

pathology of any considerable number of our list of diseases.

Other Factors. Let us look for other evidence bearing on the subject. Lane builds his whole theory on the assumption that a full cecum, stomach, transverse colon, etc., will, by the action of gravity alone, become ptosed. Cannon¹⁹ shows us that "in the abdomen, gravity can have no effect." "Even when the body is in the upright position, and a large, artificial opening connects the stomach and intestine, water will not run out." After gastro-enterostomy, if the pylorus is patent, all or nearly all of the gastric contents goes through the pylorus. If the lowest point in the cecum is anastomosed to the rectum, the contents of the cecum will still pass up the ascending colon, and over the hepatic flexure. Lane's whole theory, then, seems to be based on a wrong premise. Furthermore, Rinkenberger²⁰ of Los Angeles spent some time in Lane's clinic in 1911. He says he took a series of healthy young men and demonstrated with the x-ray absolutely the same pictures as Lane was showing as stasis. Bassler²¹ says that at least 18% of all people show a Lane's kink, and that in 167 cases showing definite kinks, in only five did the kink cause definite delay. The evidence seems overwhelming that Lane has missed the primary factor in the whole matter.

Giving up the idea of finding a single cause for all of our list of diseases, or even for all cases of intestinal stasis, let us consider some of the evidence concerning certain types of infections. Adami advanced his ideas regarding subinfection in 1899, and in 1914 he suggested subinfection as the primary cause in many of these diseases of doubtful etiology. Lymph nodes of the respiratory and alimentary tracts of normal animals constantly afford cultures of bacteria, and livers and kidneys of healthy animals may yield cultures. Leucocytes constantly carry bacteria into the system, and as these bacteria are destroyed, their toxins poison the adjacent cells, bringing about the death of the cells, and their replacement by fibrous tissue. Tubercle bacilli and other bacteria fed to young animals may be found in the thoracic duct in an hour or two. Colon bacilli and streptococci were occasionally found in blood cultures by Lane, but Lane did not do blood cultures on all his patients. Adami claims that many of the symptoms and conditions given by Lane follow subinfections, not necessarily originating in the colon, but anywhere from mouth to anus. Recurrent inoculation of animals with colon bacilli and streptococci has demonstrated this. Charlton²² demonstrated that a grave anemia may be produced in animals by this means. Luff²³ states that the lesions in arthritis and myositis are of the nature of hyperplasia of ordinary connective tissue, which may resolve, or go on to the formation of nodules or patches of thickening. Opie²⁴ thinks cirrhosis of the liver is probably due to a similar process, and Gaskell²⁵

includes chronic Bright's disease in the same category.

The work of Billings, Rosenow, and their associates on focal infections supplements the work on subinfection. They have proven beyond question that bacteria may live for indefinite periods in circumscribed, confined colonies in certain tissues. These colonies may send out small masses of bacteria into the blood stream which form bacterial emboli and cause various lesions. Streptococci, pneumococci, staphylococci, gonococci, and tubercle bacilli, and other bacteria, may grow and be carried to distant tissues in this manner. The foci may be anywhere in the body. Favorite sites are the tonsils, peridental tissue, nasal sinuses, Fallopian tubes, and prostate gland. It seems definitely proven that arthritis deformans, gonorrheal arthritis, and tubercular arthritis and adenitis are caused in this way.

Gastric and duodenal ulcers and appendicitis are almost certainly in this class. Rosenow has obtained pure cultures of streptococci from the deep tissues of excised gastric ulcers, inoculated rabbits from the cultures, and produced typical gastric ulcers in the rabbits, from which he again obtained the same strain of streptococci. Many other diseases which were formerly supposed to be due to various diatheses, dyscrasias, and toxemias are now known to be of infectious origin.

I am not trying to prove that all the diseases in Lane's list are caused primarily by subinfections or focal infections; in fact, quite the contrary. I think some of them are due to faulty metabolism—for example, diabetes mellitus, gout, and probably migraine. In most cases tuberculosis is probably a primary infection. The neuroses, such as neurasthenia, are probably due to a variety of causes. Indeed, any person with a serious chronic disease becomes more or less neurotic. Conditions vaguely described as debility, loss of vitality, asthenia, etc., may be due to anything from incipient tuberculosis to lack of proper prenatal nourishment. No one primary cause will explain all cases of stasis and ptosis,—neither Lane's gravity theory, Adami's subinfections, nor Goldthwait's anatomic and mechanistic conception.

May not some of this class of thin, ptotic, apparently toxicemic individuals be victims of under-nutrition, or malnutrition, dating back to their prenatal and postnatal periods? May not the nutrition of the child *in utero* and in babyhood and early childhood be a factor in determining the size, skeletal and muscular development, and stamina, that predisposes on the one hand to strong, well-formed, robust manhood, or on the other to the stoop-shouldered, anemic, ptotic dyspeptic who is heir to intestinal ptosis and stasis and other atonic conditions?

Surgical Treatment. When these patients are operated, it is usually for either toxemia,

stasis, obstruction, or arthritis. The operations range from division of adhesions to extirpation of the most of the colon. The details of the various operations I will leave to the surgeons.

As to the results of surgical treatment, some of the figures are very interesting. Fagge and Hughes²⁶ recently reported end results on all of Lane's cases short-circuited for arthritis from 1909 to August, 1914. There were 33 operations. Six patients died within 4 months, 1 at 15 months, and 1 not known. The death rate seems to be about 25%.

Dr. Bottomley²⁷ recently reported results on 10 cases of his own, 7 of Lane's, and 14 of Rea Smith's,—operated for arthritis. Taking 29 of these $1\frac{1}{2}$ to 3 years post operative, the results figure approximately as follows:—Cured or greatly improved 42%; considerably improved 55%; worse 14%; no change 24%. Deaths $6\frac{1}{2}\%$.

It is stated that "amelioration in general health followed in all cases." (I presume the statement applies only to those who survived the operation.) I have been unable to find any conclusive experimental or clinical evidence that an organism causing arthritis has ever been found to have its primary focus in the intestine. We know that bacteria will sometimes pass through the wall of the bowel, and get into the circulation, but unless the primary focus is in the bowel, it seems to me that short-circuiting is contraindicated. I think the weight of evidence is much against toxemia as a cause of arthritis deformans.

I have not at hand statistics on large series of cases operated for stasis. Dr. W. E. Browne of Boston, in a private communication, reports 3 cases which he short-circuited over one year ago. All of these are relieved of the symptoms for which they were operated.

In most series of cases reported, recurrence of symptoms after a short time, and trouble from adhesions and obstructive conditions, requiring subsequent operations, appear with rather marked frequency.

Medical Treatment. The medical treatment for chronic intestinal stasis, in cases without anatomic or pathologic cause of stasis, is very ably summarized by Bastedo.²⁸ It includes education of the patient as to habit formation as regards bowel movements; exercise; massage of the abdomen in certain cases; support of the abdomen; diet to give bulk to the stools and to furnish mechanical and chemical stimulation to the mucosa; water drinking; medicinal agents, such as the salines, agar-agar, and paraffine oil. It may be well to mention here that Ross of the Lister Institute, London, has found that some paraffine oils contain substances which stimulate cell proliferation, and may be an active cause of cancer. Cameron, Eckhardt, Eulenberg, Hoffman, and George Liebe have all called attention to the frequency of cancer in paraffine workers. It is said that the irritating substances may

easily be removed by a process described by Ross. (Third volume of his *Researches*). Paraffine oil is much in vogue at the present time. In my opinion, it is no more valuable than several other laxatives, and it is rather expensive. Plenty of rest in the recumbent position, a fattening diet, and treatment of the accompanying neuroses should also be mentioned as valuable in treating these patients.

The immediate results of medical treatment are almost invariably good. In fact it is a question in my mind if the rest in bed, careful regulation of diet and bowels over a considerable period, tonic treatment, and the psychic effect of the operation are not the important factors in the relief of many of these patients who are operated. Are not many of them relieved, not *because of* the operation, but *in spite of* the operation? The fact that so many patients survive the short-circuiting operation without more serious ill effects is, to me, evidence that God is good, and that in planning the internal economy of the abdomen, He anticipated much meddlesome interference by over-enthusiastic surgeons.

Conclusions. Some definite conclusions, it seems to me, may be drawn from the mass of work and theorizing that has been done on this subject.

1. The whole subject of intestinal toxemia is still in the stage of evolution.
2. The evidence at hand favors infection, rather than toxemia, as the primary etiological factor in many of the diseases and conditions that have been associated with stasis and ptosis; hence, every possible source of infection should be investigated in these cases.
3. Surgery should be resorted to only in two classes of cases:—
 - (a) definite obstruction;
 - (b) cases in which the primary cause of the trouble is removable, and may be located beyond reasonable doubt at the site of the proposed operation.
4. The words in reference to this subject of that great surgeon, William J. Mayo, should be carefully considered:—"When one looks back over the fads and fancies in medicine.....one may well pause, and make haste slowly."

REFERENCES.

- ¹ Bouchard: *Lecons sur les Autointoxications*, etc., Paris, 1887.
- ² Metchnikoff: *Scientifically Sour Milk: Its Influence on Arresting Intestinal Putrefaction*, etc., Paris, 1907; *The Prolongation of Life*, etc., New York and London, 1908.
- ³ Lane: *Chronic Intestinal Stasis*, *Trans. of the Am. Surg. Assn.*, 1909, p. 23; *Operative Treatment of Chronic Constipation*, London, 1909; *The Kink of the Ileum in Chronic Intestinal Stasis*, London, 1910.
- ⁴ Watson: *Chronic Intestinal Stasis*, *The Clin. Jour.*, London, June 30, 1915.
- ⁵ Mayo, Charles H.: *Resection of the First Portion of the Large Intestine*, etc., *Jour. A. M. A.*, Aug. 8, 1914, p. 446; *Removal of the Right Colon*, etc., *Jour. A. M. A.*, Sept. 9, 1916, p. 779.
- ⁶ Kellogg: *Incompetency of the Ileo-Caecal Valve*, 1913; *Surgery of the Ileo-caecal Valve*, *Surg., Gyn., and Obstet.*, Nov. 13, 1913, p. 563.
- ⁷ Martin, Edward: Paper read at Boston Medical Library, Nov. 19, 1913; *Therapeutic Answer to Chronic Right Ileac Pain*.
- ⁸ Keith: *British Journal Surgery*, 1914-1915, ii, p. 876.

- ³ Beveridge: Role of Internal Secretions in the Causation of Arthritis, *Am. Med.*, June, 1915.
- ⁴ Goldthwait: An Anatomic and Mechanistic Conception of Disease, *BOSTON MEDICAL AND SURGICAL JOURNAL*, June 17, 1915, p. 581.
- ⁵ Dean: Morbidity and Morphology, *Johns Hopkins Bulletin*, December, 1912.
- ⁶ Bryant: The Carnivorous and Herbivorous Types in Man, *Boston Medical and Surgical Journal*, March 4, 1915, p. 321.
- ⁷ Adams: On Latent Infection and Subinfection, *Jour. A. M. A.*, Dec. 23, 1899; Chronic Intestinal Stasis, *Brit. Med. Jour.*, Jan. 24, 1914, p. 177.
- ⁸ Billings: Chronic Focal Infection as a Causative Factor in Chronic Arthritis, *Jour. A. M. A.*, Sept. 12, 1914, p. 899, *et al.*
- ⁹ Rosenow: The Newer Bacteriology, etc., *Jour. A. M. A.*, Sept. 12, 1914, p. 903; The Etiology of Arthritis Deformans, *Jour. A. M. A.*, April 11, 1914, p. 111, *et al.*
- ¹⁰ Howell: Text Book of Physiology, Fifth edition, 1914, p. 837.
- ¹¹ Folin: Intermediary Protein Metabolism, *Jour. A. M. A.*, Sept. 5, 1914, p. 823.
- ¹² Vaughan: Cutter Lectures, 1915.
- ¹³ Cannon: The Mechanical Factors of Digestion, 1911, p. 48.
- ¹⁴ Rinkenberger: Discussion, *Jour. A. M. A.*, Aug. 28, 1915, p. 770.
- ¹⁵ Jout: A. M. A., Oct. 24, 1914, p. 1469.
- ¹⁶ Charlton: *Jour. Med. Research*, viii, 1902, p. 344.
- ¹⁷ Luff: *Brit. Med. Jour.*, 1913, i, p. 756.
- ¹⁸ Opie: *Trans. Assoc. of Am. Physicians*, xxv, 1910, p. 140.
- ¹⁹ Gaskell: *Jour. of Path. and Bact.*, xvi, 1912, p. 287.
- ²⁰ Faace and Hughes: Analysis of a Consecutive Series of Various Forms of Arthritis Treated by Ileocolostomy or Colectomy, *Brit. Jour. Surg.*, 1914-1915, ii, p. 657.
- ²¹ Bottomley: The Value of Ileostigmistomy and Similar Procedures in the Treatment of Chronic Multiple Arthritis, *Jour. A. M. A.*, Sept. 9, 1916, p. 732.
- ²² Bastedo: The Medical Treatment of Chronic Intestinal Stasis, *Jour. A. M. A.*, Aug. 29, 1914, p. 715.

TRENCH-FOOT.

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THERE is a peculiar and interesting affection of the soldier's foot, occurring during the winter months, roughly from December to March, which has been designated by various connotative terms, such as frost-bite, trench frost-bite, water-bite, boot-bite and chilled foot. In view of the fact, however, that it occurs in the large majority of the cases when the temperature is not below freezing-point, and that the varying factors of cold, wet, localized pressure and inactivity contribute to it, the term "trench-foot" has been generally accepted for its designation. This condition is not unique to this war, but was observed in the Balkan war, particularly among the Greek troops in the advance posts at the siege of Bizani; occurring not so much during very cold weather as during rainy weather, and presenting four characteristic symptoms: anesthesia, pain, oedema and cyanosis in varying degrees. The condition is common to both British and French armies on the western front and occurs with such frequency that it becomes of considerable importance, in the invaliding for several weeks of thousands of active soldiers. Mr. F. McG. Loughnane, former British Red Cross surgeon at the Meerut Stationary Hospital, Boulogne, reports that out of one convoy of 160 cases, about 120 were cases of trench-foot, many of them upon stretchers. A large number of these cases would be fit in a few days to be

sent back to light duty, but many others with more severe symptoms would be sent to the base hospitals for prolonged treatment. To give two instances in the French army: During the winter 1914-15 M. Berthélemy observed 400 cases in his field hospital near Ypres, while MM. Orticoni and Delage evacuated 4,657 cases from a clearing station at Popperinghe. In the American Women's War Hospital during the last two winters there have been admitted about 180 cases of trench-foot, amounting to 8% of all the patients admitted since the hospital was opened, and to 17% of those cases admitted during the prevalence of trench-foot. These cases have had an average length of illness of 22 days. Before they were back on active service 5-6 weeks had probably elapsed. This last winter the number of cases has diminished to nearly a third of those treated during the winter of 1914-15. Assuming this to be the case in other hospitals, the wisdom acquired during the previous winter seems to have borne fruit in prevention.

The symptoms of trench-foot vary somewhat in degree and order of onset, involving both feet usually, occasionally only one foot. After a period of duty in the trenches, varying from a few hours to several days, invariably soaked with cold water up to knees or hips, the soldier feels that his feet are becoming numb and cold. He knocks them against whatever hard surface presents, to restore normal sensation. In a few hours they begin to swell. This may go on for 3-4 days. Gradually pain and tenderness develop, impeding walking or making it impossible. The pain assumes several forms: it may be a severe tingling or burning of the foot, most marked at the points of greatest pressure—heel and ball of foot; often it is of a rheumatic type, involving the toes and ankles when movement is attempted. Again, it may extend up the calves to knee and thigh muscles, tingling and prickling—neuritic in type. In these cases the calf muscles are generally tender. The pain is usually of the first two types, confined to the foot. In a lesser number of cases the first symptom may be pain of the types mentioned, followed by swelling and numbness; or the sensation of swelling, with final onset of pain. The rapidity of development of symptoms varies, doubtless according to the individual differences in circulation and resistance. For instance, one case had been in the trenches six days continuously when symptoms began and on the twelfth day he was incapacitated. Another had been on duty only 24 hours when forced to withdraw. In the average case symptoms set in after 3-4 days' duty and incapacitate in 24-48 hours.

In clinical appearance there are several varieties of trench-foot, depending upon the degree of exposure. In the simplest type there is a discoloration of the skin, varying from a hyperaemia to a dark red or purple hue. Usually this is confined to the areas where greatest pressure is exerted by the shoe: the head of the first me-

tatarsal bone, the first and fifth metatarso-phalangeal joints, the big toe and the joints of the smaller toes. It may involve merely the depression at the base of the toes or extend over the dorsum and external border of the foot, generally in such cases with some swelling. The sole of the foot is usually not involved. Anesthesia to touch and pin-point and hyperesthesia, sometimes both, are observed; occasionally pain. The anesthesia is confined to the areas of discoloration and is very common in the toes, particularly the big toes. The hyperesthesia generally occurs in a small zone just outside the anesthetic areas though occasionally it may involve the whole dorsum. Pain is usually elicited by active or passive motions in the metatarso-phalangeal joints.

Another type, characterized by somewhat more severe subjective symptoms, seems at first to be normal in appearance. There is no discoloration. In the first day or two there may be some oedema; none after. The skin is rough and dry, rather more pale than normal. Hyperesthesia is apt to be general and acute, accompanied by numbness of the toes. In these cases burning and tingling may be severe, accentuated to an unbearable degree by warm coverings, proximity to a fire, or even draughts of air. Severe pain is elicited by motion in the toe and ankle joints.

In the longer exposed and more severe types, the chief features are the deep discoloration and oedema, often accompanied by blebs and ulcerations. The discoloration is of a deep purple hue, involving in cases of only moderate oedema the distal portion of the dorsum of the foot, but in the more pronounced cases extending over the back of the foot and toes, even involving the sole. The oedema varies from a moderate puffiness of the dorsum to an extreme degree of swelling of the foot and ankle, with tense shining skin, occasionally extending upward upon the lower leg. Superficial blebs are often seen in these cases, developing at the points of pressure along the dorsum of foot and toes. If the discoloration is only moderate their contents are of a yellowish, serous nature, but in the more deeply cyanosed feet they contain a dark-red, often offensive, fluid. Ulcerations are likewise common at similar points, developing from ruptured blebs, easily infected and occasionally extending to such a depth as to expose the underlying bone. The toenails are often black, separating in course of time. In rare cases large blebs with offensive bloody contents may develop upon the backs and soles of the feet. These feet are very painful, preventing walking, tingling and burning to an extreme degree, especially at night and when exposed to heat. Rheumatic pains are felt in toes and ankles. Occasionally pain, pricking and constant, extends up the leg to the knee, even to the thigh. After all other symptoms have subsided this pain may persist. Tenderness of the calf muscles accompanies it.

Anesthesia and hyperesthesia are also present; sometimes the one predominating, sometimes the other. In an anesthetic foot there is often a deep tenderness, elicited by firm pressure. One other feature is often noted in these more severe trench-feet—muscular paralysis. In the more pronounced cases the patient is unable to move the foot. Usually only the toes are affected, and the big toe is held in extreme dorsal flexion.

In these more severe types of trench-foot gangrene at times supervenes. As a rule it occurs at the areas of bony projection upon the dorsum of the foot,—small, rounded superficial islands of blackened slough; or upon the joints and tips of the toes, involving the nail. It is more often dry than moist. At times the first and second phalanges of the toes are involved. In the most severe cases, fortunately few in number, the whole foot is involved in a massive gangrene extending to the ankle. Cases of infection with gas bacillus and tetanus have been reported.

After considering these types of trench-foot, the query is natural as to how they differ from the types of frost-bite which are seen in civil practice in cold climates. The chief feature is that they do not occur when the temperature is low enough to freeze of itself. The absence of synchronous frost-bites of fingers, noses and ears is noticeable. One case of involvement of the hand and forearm is reported by M. Tuffier in the "*Bulletins et Mémoires de la Société de Chirurgie*"—that of an officer who, after being shot in the chest, fell to the bottom of the trench, lying for several hours in cold water and mud with his arm beneath him. His forearm and hand presented signs and symptoms quite like those of trench-foot. To be sure, the majority of the cases of severe gangrene seem to have occurred when the temperature was considerably below zero. Yet cases of massive gangrene have been observed when there was no frost. The greater number of the cases of trench-foot has occurred when the temperature was not much below freezing-point. In a dry climate with ordinary clothing this would not be enough to cause frost-bites.

The weather conditions along the western front during the last two winters have been very bad, with copious rainfall, occasional snowstorms and a chill, sunless air. The front-line trenches, where the stress of battle is greatest and it is impossible to provide adequate flooring, have been filled from ankle to thigh with water, mud and slush, cold from the melting snow and ice. In these must the soldier stay for days, soaked to the hips, often forced, from fear of exposing himself to the enemy, to crouch in painful positions with a minimum of activity. He wears a heavy, unyielding, poorly-fitting pair of boots, often with two pairs of woollen socks for warmth, and cloth puttees wound about the leg from ankle to knee. As the shoes and puttees become wet they contract

upon the leg and foot, impeding the circulation. Venous stasis results, with oedema and the numbness and tingling which is commonly experienced in ordinary cases when the circulation is temporarily shut off. If the exposure continues, the swelling increases until blebs and ulcerations develop from pressure, or until the circulation is so shut off that gangrene results. Thus it appears that several factors contribute to the condition: (1) cold,—not enough to freeze of itself, but enough to reduce the resistance of the tissues through chilling; (2) wet,—accentuating the chilling effects of the cold and interfering with the circulation by causing shoes and puttees to swell; (3) inactivity,—often in cramped positions, conducive to a sluggish circulation not only from lack of exercise but from constriction of the vessels in the popliteal space. It is noticeable that officers, who not only have more protection from the wet but must move about more than the private, are much less afflicted with trench-foot.

It is impossible to dogmatize concerning the changes which take place in the tissues, as naturally no material is available for examination. The condition seems to be fundamentally physical, due to circulatory disturbances. The initial effect is probably that of impeded venous circulation. Exposed to continuous cold and wet the tissues lose their elasticity. The vessels dilate, with resulting congestion. Oedema follows, increasing until it is restrained by an unyielding boot. Blebs and ulcers develop at the points of greatest pressure. If the oedema under pressure continues, the arterial blood stream is choked off, with resultant necrosis. At certain areas, occasionally over the whole foot, the sensory nerve endings are so compressed as to destroy them or inhibit the transmission of impulses. In areas of lesser pressure, they are so traumatized as to become hypersensitive, with resulting hyperesthesia. The latter, together with the pains of foot and leg, may be due to trophic disturbance of the nerve trunk: a neuritis. One case is on record in the "Bulletins et Mémoires de la Société de Chirurgie," complicated by severe pains in the calf muscles, in which the observer, Pl. Maucclair, found the posterior tibial nerve trunks indurated and enlarged to twice and three times their normal size. The various types of trench-foot seem but different stages in a progressive pathological change arising from physical causes.

The treatment of trench-foot is simple, consisting of elevation, protection from heat, massage with oil and sedatives. With the feet raised upon pillows the greater part of the oedema subsides in 2-3 days. In the majority of cases, with complicating hyperesthesia, coverings of any sort, exposure to heat, even slight currents of air, give rise to intolerable pricking and burning, most severe at night. Hence the feet are placed below a covered cradle, open at

one end for coolness. In certain of the cases of generalized anaesthesia, heat is well tolerated. As a rule the subjective symptoms are relieved by massage with olive oil. It must be gentle at first, becoming more energetic from day to day. Gradually the blood-vessels recover their tonicity, and the congestion and residual oedema disappear. Applications of electricity seem to be beneficial. If the pain persists, various sedative applications may relieve it, such as a mixture in equal parts of the liniments of aconite, belladonna and chloroform; or of acetate of lead and tincture of opium ʒiv : ʒi in water to one pint. Occasionally the pain may be so persistent as to prevent sleep for several days. In such cases, morphia, codein and other sedatives must be administered. Under this treatment, of the cases not complicated by gangrene, the simplest will recover in about two weeks, the average in three weeks, while the most severe may linger on from five to seven weeks. In most of these cases, after getting up and attempting to walk, the feet will become congested and a little oedematous, with no recurrence of symptoms. In a few days, with active exercise, the congestion and oedema subside. The cases of gangrene are longer in recovery. As already mentioned, the gangrene is usually dry, in which case one waits until a line of demarcation has developed and excises or amputates. Certain of the cases of moist gangrene, particularly those involving much of the foot, present urgent and fulminating symptoms, requiring immediate amputation.

The prevention of trench-foot is a matter of some importance. It has been found impracticable to keep dry the front-line trenches in the low-lying districts during the rainy season. Various kinds of long waterproof boots have been considered, but are objectionable in that they impede the activity of the soldier by their weight and bulk. Frequent applications of oil have been found useful. The measure of greatest benefit seems to be a shorter period of duty in the trenches, with more frequent relief. During the first winter of this war the soldier was compelled, through lack of reserves, to stay in the trenches for much longer periods than during this past winter, with the result that trench-feet were much more common and of more severe type.

In conclusion a few cases are given representing the various types of trench-foot:

Case No. 1.—*Simple type.*

Lance-Corporal R.W.L.P. Aged 33. 17th Royal Fusiliers.

The patient had been in the trenches four days, standing in water knee deep, soaked to the hips. It was snowing part of the time, and at night was cold enough to form a thin coat of ice. Patient wore cloth puttees and regulation army boots and one pair of socks. Unable to move about much. On the fourth day his feet began to grow numb, with onset of severe burning

and tingling. Pain developed at the bases of the fourth and fifth toes of both feet. In two days he was unable to stand. Shoes removed at dressing station. Feet much swollen, purple in color. Sent to field hospital, where he remained five days. Swelling rapidly decreased, but discoloration with burning and tingling persisted. Tingling pain extended up back of leg to mid-thigh. On admission to the A. W. W. H. the dorsa and toes of both feet were blue and cold. No swelling. Anesthesia to touch and pin-point over both big toes, with diminished sensation over other toes and dorsa. All joints freely movable without pain. No paralysis. Considerable burning of the feet with slight persistent pain in calf muscles. The usual treatment of elevation, protection from heat, and massage with oil was instituted. In five days the burning had ceased, color normal. On eighth day patient was walking without pain, but with reappearance of slight oedema and congestion. Numbness of big toes persisted. Discharged to convalescent home on 17th day, with numbness of big toes, slight congestion. Wearing heavy boots without pain. No pain in calf muscles.

Case No. 2.—*Pale foot with severe subjective symptoms.*

Private T. L. Aged 22. 6th Connaught Rangers.

Patient had been in trenches four days, water to the knees, freezing at night. Wore cloth puttees, army boots and two pairs of socks. Cramped position. Feet began to swell and grow numb. Severe pain in toes and ankles. In three days unable to walk. Boots cut off at dressing station. Feet swollen but not discolored. Severe tingling pain in legs with tenderness of calf muscles. Three days in field hospital. On admission to A. W. W. H. feet not discolored, more pale than normal. Cold to touch. No swelling. Skin rough and dry. Big toes and dorsa of feet anesthetic. Diminished sensation in other toes and soles of feet. External borders extremely hyperesthetic. Severe tingling of heels, external borders and at bases of big toes. Pain in legs had ceased. No paralysis. Routine treatment for three days, during which pain was most severe. Patient unable to sleep, requiring morphia. On 4th day alternating applications of lead and opium, and liniments of aconite, belladonna and chloroform were begun. In 24 hours there was marked relief. In 10 days there was only occasional burning along external borders of feet. Patient walking on 16th day. Development of slight puffiness and congestion. Slight pain in walking. At end of 5th week patient was ready for discharge to convalescent home. Walking without pain. Slight numbness of both big toes. No congestion or swelling.

Case No. 3.—*Bleb formation with eventual gangrene.*

Private W. M. Aged 35. R. A. M. C.

On sick list 10 days before admission to A. W. W. H. with usual history. Left foot not involved. Right foot presented large blebs with bloody contents along outer side of dorsum, partly involving the sole. In seven weeks the outer border of the foot had sloughed away, revealing a necrotic fifth metatarsal, bare of periosteum. This was excised with the little toe. Wound healed by granulation. Patient invalided out of the service after four months in hospital.

Case No. 4.—*Gangrene of toes.*

Private M.D. 2nd Royal Scots.

Admitted to A. W. W. H. January 4th, 1915. Usual previous history. On sick list five days before. Both feet were discolored over toes to dorsum of foot. An irregular line of anesthesia extending half-way up the dorsa. Multiple blebs on both feet. By March, 1915, all the toes showed dry gangrene with sharp lines of demarcation. All toes were amputated. Subsequent removal of tips of first metatarsals for necrosis. Patient invalided out of the service August 2d, 1915.

Case No. 5.—*Gangrene of foot.*

Private F. W. C. 3rd Devons.

Admitted to A. W. W. H. on March 3rd, 1915. Previous history as to nature of onset incomplete. On sick list Dec. 28th, 1914. While in France he had a Chopart's amputation of right foot, also amputation of all toes of left foot.

Invalided out of the service July 22, 1915.

There are many cases similar to the last three which must be invalided. Their country not only loses their services, but incurs the burden of their pensions. It is manifest that trench-foot, though often a minor affection, constitutes a serious problem for a nation at war.

ILEOSTOMY FOR ILEUS AND GENERAL PERITONITIS.

By JOHN W. LANE, M.D., F.A.C.S., BOSTON.

INTESTINAL obstruction and the ileus resulting from peritonitis are still presenting an extremely high mortality. Statistics presented within the past few years (McGlannan in 1913 and Deaver in 1915) show the mortality from intestinal obstruction to be over 50%, and in advanced obstruction, almost 100%, in spite of any treatment offered.

Since Fowler suggested the upright position, and Murphy inaugurated continued proctocolysis to maintain the body fluids, a considerable advance has been made in the treatment of diffuse peritonitis, and cases which were considered hopeless fifteen years ago offer, in a large percent, recovery. There remain, however, the cases of general peritonitis and advanced acute obstruction which still die, and this paper is a plea that greater consideration be given these cases.

We must first consider the cause of death in the advanced obstructions. Owing to the careful investigation of the surgical physiologists some advance in our knowledge has been made.

In the first place, it was discovered that the higher up in the intestinal tract the obstruction took place, the more rapidly death ensued, and especially is this true when the obstruction is produced in the duodenum. Many experiments have been done on this subject. In June, 1912, Hartwell and Hoguet reported at the annual

session of the American Medical Association the results in a series of obstructed dogs. They say:—"Dogs with complete obstruction in the lower duodenum, if untreated, will live only a few days; they will vomit large quantities, and the urine shows marked abnormalities compared with a dog suffering from simple starvation. If a quantity of normal saline solution slightly in excess of the total loss of water in the urine and vomitus be given daily by hypodermoclysis, the dogs promptly return to the condition of a dog undergoing simple starvation. Dogs so treated have lived in excellent health for three weeks, showing at the end of that time every indication of living much longer if treatment were continued. The important element, therefore, in the development of symptoms seen in intestinal obstruction in dogs is the excessive loss of water due to vomiting. The symptoms in high obstruction are those resulting from tissue disintegration following this loss. Replacement of water cures the symptoms and prevents death over an astonishingly long period. If strangulation complicates the obstruction, the above facts do not seem to be true."

Whipple, of Baltimore, in a series of experiments in which a segment of duodenum was obstructed came to the conclusion that dehydration may be important but that there is a toxic substance present which causes death.

Murphy and Vincent in a series of similar experiments concluded that this toxic substance was probably not a chemical poison, because the supernatant filtrate was not toxic.

Draper, in a study reported in 1914, stated that this toxic substance was probably formed as a result of injury to the cells of the intestines. He also found, if epithelial cell emulsion of normal dogs was fed to dogs experimentally obstructed at the duodenum, that life was prolonged for some considerable hours over that of the control dogs. In 1916, Draper reports that the series observed, in the past year and under like conditions, fails to show any prolongation of life from this treatment. In fact, he says that the average duration of life was less than in the control, thus casting doubt on the further value of this working hypothesis.

Sweet, while agreeing that a toxin is formed in the duodenum, believes that the pancreas in intestinal obstruction probably also produces some toxic activity; and he has recalled the clinical resemblance between acute pancreatitis and duodenal obstruction.

Draper's latest conclusion is that the cause of death in intestinal obstruction is still unknown, but that all recent studies point to some aberrant activity of duodenal and pancreatic cells. He believes that the old hypothesis that the toxin is of bacterial and food decomposition origin may be looked upon as discarded. Dehydration, he feels, is of no greater importance in this than in other toxemias. He seems to think that there is an important ratio between the toxic epithe-

lium and its digestive power, the toxicity varying inversely with the digestive powers; and in accord with this thought, McKenna, of Chicago, states that he has operated successfully eight human cases of acute obstruction by performing jejunostomy, preferably in the upper part of the jejunum.

Sweet, in a paper on intestinal obstruction, states, "We are aware that surgery already possesses a plethora of theories; but as long as a theory is given its proper valuation as a theory, as a working hypothesis, and is not accepted until supported by such an array of facts that the theory has itself become a fact, these theories offer the only means of progress in a field where so little is known."

These are the various, experimental conclusions up to the present time, and until it is possible to isolate a definite toxic substance, no treatment by antitoxin or vaccine can offer much hope. The clinical fact remains, however, that unrelieved intestinal obstruction is an invariably fatal condition irrespective of the cause, and to become non-fatal it must be embattled fearlessly.

Let us now turn our attention to the cause of death in acute general peritonitis. As the patient approaches fatal termination, the picture, indeed, is practically the same as at the end of intestinal obstruction. The abdomen is distended and, in the latter stages, not very spastic. There is likely to be continuous and even fecal vomiting, all of these increasing until death finally ensues as a result of peritoneal infection and ileus. But if the intestine can be drained rapidly of its contents it is remarkable how quickly the patient recovers, showing that the main factor in a general peritonitis also is the toxic material produced in the small intestine. Another condition almost as fatal, if uncontrollable, and of great interest to all laparotomists and, indeed, to all practitioners in whose patients it has occurred, is post-operative intestinal paralysis; a condition which may arise after any laparotomy, no matter how simple. Post-operative ileus is towards its termination the same as the two preceding types.

From an experience of many cases of ileus extending over a period of twelve years, I have reached the conclusion that something better can be done than is now done. I cannot feel otherwise from clinical experience than that death in these three groups is due mainly to toxemia from retained intestinal products, whether these products be decomposed food products, degenerating intestinal or pancreatic cells, or increased bacterial action. It seems to me, therefore, that the logical treatment in these advanced cases of ileus is drainage of the intestine. This being the case, the great problem comes as to what is the best method of accomplishing this end. Some surgeons advocate a caecostomy, others an enterostomy, and McKenna, as we have seen

above, advocates a high jejunostomy. Handley advocates an ileo-colostomy rapidly performed, the anastomosis taking place at the mid-colon; and, in addition, a caecostomy. Other writers advocate a rapid emptying of the bowel by threading it upon a long glass tube. This is especially recommended by Moynihan, who however, is not altogether enthusiastic about its virtue. It has been my experience that enterostomy has been occasionally successful if it were the only operative measure performed. If the gut were opened at the time of operation to drain off the gas and fecal contents, with or without a subsequent enterostomy, the results have been fatal; whether the operations were performed for an acute obstruction per se, or ileus occurring in the course of a peritonitis or after laparotomy.

McKenna seems to have much logic on his side in his support of high jejunostomy when we consider the cause of death in these cases; and his eight successful cases are a striking argument for his method.

Handley's method of ileo-colostomy followed by caecostomy seems to me a very heroic procedure. With it I have had no experience.

Moynihan's method cited above has given me no successful result. But I have observed that a permanent colostomy performed according to the method so clearly described by him in his "Abdominal Operations" has never failed to drain the intestinal contents. It, therefore, has suggested itself that a similar method applied to the ileum in cases of acute intestinal obstruction and in cases of ileus occurring in the course of a general peritonitis, would also be successful in draining the intestines.

In cases of acute general peritonitis due to a ruptured appendix, my method of operative procedure is as follows:—

A rapid incision through the right rectus muscle or a McBurney, whichever can be performed more rapidly, is made. If the appendix cannot be removed in less than two minutes it is permitted to remain. A drain is placed to the pelvis and loin and a loop of small intestine, the most easily accessible, is drawn out of the wound and held outside the skin, which is closed snugly but without constriction around the loop and the wick. In the course of one hour, this bowel, through the formation of lymph exudate, is absolutely sealed off from the rest of the abdominal cavity. If, at the end of six hours there is persistent vomiting and bowel movements are unsatisfactory, an opening is made in the exposed loop of gut. If free flow of that intestinal contents does not take place at once, it is started by irrigation with salt solution.

The action of this loop is illustrated by the following case:—

Charles G., ten years of age. On August 25th this boy was operated at a private hospital for an

attack of acute appendicitis of less than twenty-four hours' duration. A McBurney incision was made and the appendix was found tense, swollen, slightly injected, with no fibrin on its surface and no evidence of gangrene. It was removed without incident and its stump was inverted. The wound was closed in layers with plain catgut. The patient made an uninterrupted convalescence until four days later when he began to have abdominal pains and vomit considerably. He vomited all that night; and the next morning, when seen with his physician, Dr. Sweeney of Atlantic, at 9.30, he then presented a pinched, drawn, peritoneal facies. The abdomen was slightly distended in its lower half, and there existed considerable, general, abdominal spasm. A diagnosis of peritonitis was made and the patient was re-operated upon at once. The wound was reopened; it was septic and the abdominal cavity was full of pus. Wicks were inserted for drainage and the wound left wide open. Fowler's position and proctocolysis were instituted. The next morning the abdomen appeared more distended in the epigastrium and there had been no cessation of vomiting, which was now fecal. A loop of small intestine about four inches long was protruding from the wound; it evidently having exenterated on account of emetic straining; it was greatly distended and it was sealed off from the cavity. Without anesthesia, a longitudinal incision 11-2 inches long was made in the loop with the immediate escape of gas and fecal matter. The parents were very anxious to remove the boy to his home, a distance of ten miles, and on account of his piteous crying, a reluctant consent was given and the patient was taken home to die. On his arrival home the boy was in a very bad condition but rallied after stimulation. There was a constant faecal discharge from the opening; distention disappeared and the boy made a fair convalescence. On September 25th the boy was seen with his physician and at that time the presenting loop of bowel had apparently diminished in size, it presented practically a complete eversion of its mucous membrane and there had been no movements per rectum for a week. The loop appeared to be dimpled at either end as though it had been "exvaginated." On September 30th, under ether, the presenting loop of bowel was cleaned carefully with salt and water and alcohol, the field being made as sterile as possible. The everted mucous membrane was freed from its marginal attachment to the skin wound and the lumen of the bowel restored by a double continuous Lembert stitch. The spur of the bowel was then freed and the everted loop was restored within the abdominal cavity and held there with an iodoform gauze pack; the skin wound was refreshed and closed, except at the site of drainage, with silk worm gut. October 14th, the patient was discharged from the hospital, the wound almost healed save for a small granulating area. There has been no fecal discharge since the last operation. I have had two other cases of a similar nature previous to this one—one, a school teacher, twenty-two years of age, and the other a policeman, forty-eight years of age. In the case of the two latter it was not necessary to perform any secondary operation for closure of the fistula, as the bowel retracted into the abdominal cavity and closed spontaneously. I have also seen the bowel retract and disappear from view in one case of so-called permanent colostomy.

A "semi-permanent" ileostomy is the method which I use for the ileus of peritonitis, and it is also the method which I intend to use in cases of post-operative ileus when it becomes evident or even doubtful that other methods of treatment are going to fail. In acute intestinal obstruction, the technic must be varied somewhat according to the cause of the obstruction but there is one feature which must be borne in mind, that in these cases it is absolutely necessary for a recovery that the bowel drain, or empty itself per rectum, and if it does not, it must be made to drain through an enterostomy, and the surest and most certain method of draining the bowel is by an ileostomy performed according to the method which I have described above. Other methods of enterostomy I know from bitter experience often fail to drain, but I do not believe that an ileostomy, performed by this technic which I advocate, can thus fail, because it is almost impossible for even the merest tyro to perform the operation improperly. The incision of the intestine can be done by a house officer, and the opening, as a result of this method, is plainly visible at all times, making it extremely easy to start the flow of the intestinal contents by siphonage.

It may be urged as an objection to this type of enterostomy that it requires a major operation for its closure. I have, however, seen three of these cases, strange as it may seem, close spontaneously. I have been greatly surprised to find with what ease it was possible to close one of these ileostomies and return the obtruding bowel within the abdominal cavity. It is only necessary carefully to suture the opening in the bowel and close it in the same manner as is done in pyloroplasty, and when this has been done, very carefully to separate the everted loop from its marginal adhesions and return it to the abdominal cavity, and close the wound above it except for a small gauze drain.

I have found that the immediate opening of the bowel at the primary operation is dangerous, because it is almost impossible to perform it without the danger of infecting an already sick peritoneum; but if the bowel is permitted to remain outside the wound for one hour only before incision, this danger no longer exists, because, as I have pointed out above, a lymph exudate has sealed it from the peritoneal cavity. It is practically impossible, in my experience, to place a suture, however fine, into a greatly distended gut without considerable leakage. The intra-abdominal pressure from the distended loops will hold the external loop outside and prevent its withdrawal. Larger exit of bowel from the wound than the required size can be prevented by the judicious application of wire gauze over sterile gauze. When an opening is made in this way it is always accessible and the proximal or the aboral segment can be easily irrigated.

If this paper can stimulate the interest of surgeons in advanced cases of intestinal obstruction and general peritonitis, its purpose will have been achieved. In lieu of something better I believe the method to be worth a trial.

In cases of early post-operative ileus, at the suggestion of my colleague, Dr. M. J. Cronin, I have been using a culture of the *Bacillus acidophilus* with satisfactory results. The discussion of these cases, however, is reserved for a later paper.

In closing, let us remember the immortal Murphy:—"The best treatment of general peritonitis and advanced intestinal obstruction is operation before they exist."

REFERENCES.

- Draper, J. W.: Studies in Intestinal Obstruction. The Journal A.M.A. September 26, 1914.
Sweet, J. E.: Intestinal Obstruction. Annals of Surgery, lxiii, p. 720.
Whipple and Stone: Intestinal Obstruction. Study of a toxic substance. Jour. Exper. Med., 1913, xvii, 286.

"CONSTITUTIONAL" VERSUS "LOCAL" SIGNS AND SYMPTOMS IN THE DIAGNOSIS OF EARLY PULMONARY TUBERCULOSIS.

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THE diagnosis of pulmonary tuberculosis in its early stages is at best a most difficult one. It is well, therefore, to crystallize our ideas on this subject, changing as they do as progress is made, and to take account of stock from time to time, to see on what signs and symptoms this diagnosis should be based.

Ten or fifteen years ago, the medical student, if he was taught anything in regard to incipient phthisis, which is extremely doubtful, was told that this condition was characterized by slight dulness, bronchial breathing, and râles at one or both apices. Perhaps some mention might have been made of cough and sputum or evening fever. Today, thanks to a vigorous educational campaign which has been carried on, the medical profession is far more alive to the importance of the early diagnosis of consumption than ever before. As a result of this, however, we are all beginning to ask ourselves on what grounds, or what group of symptoms, local or constitutional, we should base our diagnosis and institute treatment in cases where there is no sputum or where it is persistently negative.

Last year, Dr. Richard Cabot, at an informal meeting of physicians at the Massachusetts General Hospital, asked me to state what I demanded before making a positive diagnosis of incipient phthisis. I found his question a most difficult one to answer. A similar inquiry from

a physician connected with a sanatorium about to be opened for incipient cases, awaits reply. The recently enforced law, requiring a tuberculosis dispensary for every town or city of 10,000 inhabitants or over in Massachusetts, has brought this question very strongly to the attention of the numerous physicians connected with these dispensaries whose duty it is to discover these early cases of consumption.

In order to obtain information on this subject I sent out a letter to about fifty doctors in this state, each of whom was, in some capacity or other, doing a certain amount of tuberculosis work. This list included the doctors at our four state sanatoria, at local tuberculosis hospitals, and the physicians in charge of the local tuberculosis dispensaries. In this letter I asked certain questions as to the relative value of "constitutional" signs and symptoms, including among these, family and personal history, fever, rapid pulse, loss of weight, strength and energy, night sweats, etc., as compared with "local" signs and symptoms, such as cough, sputum, hemorrhage, dulness, râles, altered voice and breath sounds, pain, etc. A study of the replies to these questions, coming from a group of men including tuberculosis specialists and general practitioners, is of interest.

Question 1. Do you get most information from the "constitutional" or "local" signs and symptoms?

Of the 46 doctors who replied to this question, 31 stated that they had more information from "constitutional," and 15 from "local" signs and symptoms. Many, of course, qualified their answers in one way or another, as in the following reply:

"I feel that this question divides patients into two classifications, infants and young children, and adults. In infants and young children, I believe we can get the most information from constitutional signs and symptoms. In adults, the individual case must answer the question. I feel very strongly that we have a great many cases diagnosed as tuberculosis from constitutional symptoms alone, and local signs and symptoms alone, which if studied longer and more carefully would prove to be some condition other than tuberculosis. We have all of us seen cases of hyperthyroidism, incipient Addison's disease, anemias, and leukaemias diagnosed as probable cases of early tuberculosis from just the constitutional signs and symptoms which you mention. On the other hand, we see bronchiectases, sub-acute bronchitis, syphilis perhaps, and non-tubercular areas in the lung which are diagnosed as positive from the local signs. If the question must be answered, I feel rather that the weight of information is perhaps on the side of the constitutional symptoms."

Question 2. Which group of signs and symptoms is most often neglected?

Of the 48 replies, 36 unhesitatingly were of the opinion that the constitutional signs and

symptoms were most often neglected. Five were evidently in doubt, and of these, one replies that "constitutional symptoms are neglected by patients, local symptoms by physicians." The following severe arraignment of certain phases of medical practice is of interest, even if somewhat exaggerated:

"Both are sadly neglected. Of the two, unquestionably the family history plus the early history I feel are more often neglected than these signs and symptoms which you list under constitutional or local signs. In childhood and early adult life, I feel that it is most important to go carefully into both of these (family history and history of early childhood). In cities like mine, and I presume Boston and other large cities suffer the same curse, we have a group of medical men who seek appointment as so-called 'society physicians.' My experiences with this group of so-called practitioners is that they never take the time to go into the subject of constitutional symptoms carefully, and rarely ever remove the overcoat of the patient to determine local symptoms. Their treatment is small, nondescript tablets which they buy by the thousand lots, and the patient is told if he does not feel better within two or three weeks to come in again. Without having any number of statistics to prove the following statement, I believe that most cases of incipient pulmonary tuberculosis go to these men before ever seeing a careful physician. And for this reason I am thoroughly convinced that here we shall never be able to get hold of all our incipient pulmonary lesions in their early stages until this class of physicians are either legislated out of office, or else instructed in the absolute necessity of careful history-taking and physical examination. I feel very strongly on this subject. Again, if the question must be answered as to which of the two groups is the more frequently neglected, I believe that in this class the constitutional signs and symptoms are more often the ones to suffer. But they suffer because the busy practitioner in his office often feels that the patient is impressed by having the stethoscope pressed against his chest, although he may not learn anything by doing so."

Question 3. With negative or nearly negative chest findings, would you make a definite diagnosis on constitutional signs and symptoms alone?

The replies to this question were evenly divided, 23 saying "yes" and 23 "no." Of those who said "yes," two qualified their answers by stating, "If these signs persisted for over a month I would make a *tentative* diagnosis," and two by stating, "Yes, if the chest signs were *nearly* negative but not if entirely so." Of those who said "no," two said that they would call such a case "pre-tuberculous," and eight that they would consider it "probably one of tuberculosis and would keep it under supervision and

institute proper treatment." One very thoughtful answer to this question was as follows:

"This is a difficult question to answer. If, after careful study, through the process of exclusion, you can feel confidently sure that you have eliminated all other possible causes for the constitutional symptoms present, if a subcutaneous tuberculin test is typically positive, I would make a diagnosis of tuberculosis. If the tuberculin test were negative, I would make the diagnosis of probable tuberculosis, inform the patient of the diagnosis, and treat the individual as a tuberculosis patient."

Question 4. Would you make a definite diagnosis on signs and symptoms referred to the lungs alone, if the history and constitutional signs were negative?

Out of 46 replies, 28 were in the affirmative. Five said "yes" but only if the signs in the lungs persisted. One doctor said "yes" but added that he would keep the patient under observation and be ready to "hedge" if necessary; and one that he would be on the watch for syphilis of the lungs. Of those who said "no," one stated that such a process might be arrested tuberculosis and that "active tuberculosis could not exist without constitutional signs and symptoms." This statement, coming from a well-known sanatorium superintendent, is of especial interest, but is one on which there would be much difference of opinion. One doctor said he would make only a provisional diagnosis under such conditions.

Question 5. In cases with a negative or absent sputum what do you demand before you are willing to make a definite diagnosis of incipient pulmonary tuberculosis?

The great majority of replies to this question were along the lines that I expected—namely, that in order to make a definite diagnosis of incipient pulmonary tuberculosis in a case with negative or absent sputum, some signs and symptoms, both local and general, should be present and that such signs and symptoms should persist. Some of the replies were of especial interest. Among them were the following:

"If we want to get the early cases, we should not demand a definite diagnosis."

"I would make a definite diagnosis of tuberculosis with a negative sputum just as quickly as with a positive sputum. * * * The public is misled by a doctor saying 'his sputum is negative'—they say 'why he has not got consumption, then.' * * * Keep at the sputum, x-ray, guinea-pig, but make the diagnosis first."

"Enough constitutional and local signs to preclude a possible doubt. In every suspicious case where it is impossible to be sure, I think that the patient should be informed of the question of doubt and treated in general as a tuberculosis case."

"Persistence of constitutional symptoms and some chest signs."

"Most of the constitutional signs and symptoms with local signs."

"Guinea-pig inoculation and a positive tuberculin test."

"Slight physical signs with a characteristic temperature and pulse."

"With two or more constitutional signs and symptoms together with a definite area of impaired resonance in the lungs, with or without râles [italics mine—J. B. H.], I should not hesitate to make a definite diagnosis of tuberculosis."

My own replies to these questions were fairly definitely formulated before I sent out my letters. To confirm them, however, I went over 200 consecutive cases of early or fairly early tuberculosis, each with negative or absent sputum, from my own records, in order to find out on what group of signs or symptoms, singly or collectively, I had based my diagnosis.

To the first question as to the relative importance of "constitutional" versus "local" symptoms, I felt very strongly that far more information was to be had from a careful study of the former—the constitutional group—rather than the latter. Likewise, in reply to the second question, I felt that the same group was a fearfully neglected one. In answer to the third and fourth questions, as to whether I would make a definite diagnosis on constitutional signs or on local signs alone, I should have said that I had made such diagnosis frequently in each instance, but far more often on constitutional evidence rather than on local signs alone, if one might exclude the large group of hemorrhage cases. Much to my surprise, I found that this was not the case. There were also some other surprising facts shown by this analysis. There were 87 cases of hemorrhage out of the 200. Excluding these, I found that I had based my diagnosis in 31 cases on purely local signs, and in only 26 cases from the history and constitutional signs and symptoms, while in 136 patients the diagnosis was based on both local and constitutional signs.

Chest signs, such as dulness, râles, etc., were present in only 131 cases out of the 200. This may mean that in a certain proportion, owing to a recent hemorrhage, I did not make a detailed examination, but even discounting these cases, it was surprising to me that such a large number were without signs of moisture or of consolidation in the lungs. A fact still more surprising to me was that my records showed that 107, or 53 per cent. of these patients denied having had any cough or sputum! Even in incipient tuberculosis we have come to look at a cough with or without sputum as such a constant phenomenon, that this high percentage without cough appears to me remarkable.

What conclusions may be drawn then, in regard to the diagnosis of incipient tuberculosis

from the evidence furnished by this group of Massachusetts physicians, each more or less intimately connected with tuberculosis work, as well as from these 200 patients of my own, who, as by far the greater number were sent to me in consultation and all were seen at my own office, were probably scrutinized with considerable care?

In the first place, it is clear that no hard and fast ruling can be made as to the diagnosis of early pre-bacillary tuberculosis. Each case must be considered on its own merits, and the signs and symptoms present, whether constitutional or local, carefully weighed and compared with those that are not present. In a certain number of cases, however, as shown not only from my own records but from the written opinion of a fairly representative group of physicians in this state, a definite diagnosis can and should be made in the absence of either constitutional or local signs and symptoms. In the vast majority of instances, a combination of both will be found present after careful study.

In regard to cough with or without sputum, a combination considered almost essential to the diagnosis of tuberculosis in any stage, my own cases show the remarkably high proportion of 107 out of 200 cases, or 53 per cent. apparently without either cough or sputum. Perhaps this high figure is only a coincidence, while in addition, it is evident that a considerable number without history of cough or sputum were hemorrhage cases whose chests were only superficially examined on this account. I believe, however, that this large group simply goes to show that not even what were considered the most classical earmarks of consumption are necessarily present in its early stages. This same point is emphasized by the fact that out of 200 cases there were 69, or 34.3 per cent. without local signs in the chest such as dullness, altered breath or voice sounds, or râles. The average fourth year medical student, if he has any clear idea at all in his mind as to what constitutes incipient pulmonary tuberculosis, certainly includes in it a history of cough and sputum, and certain signs in the lungs, such as dullness, altered breath sounds, or râles. That these were absent in over one-third of 200 patients is interesting and instructive.

The most important point, in my opinion, to be gathered from the experience of this group of physicians as expressed in their replies to my questions and from a study of the 200 cases from my own records, is the necessity of putting entirely out of one's mind any preconceived picture as to what form incipient pulmonary tuberculosis should take, or of any definite group of symptoms, local or general, it should possess. Hemorrhage may or may not be present; cough and sputum are not necessary accompaniments; signs in the lungs may be lacking; the temperature may be high or subnormal; a rapid pulse is not always present, nor is a history of loss of

weight or strength or energy always to be obtained; in fact, no one or no two signs or symptoms are essential to a correct diagnosis.

Common sense, patience and painstaking thoroughness on the part of the doctor are the true essentials in arriving at the truth. It is more what the physician has in his head, and less what the patient has in his lungs on which the correct diagnosis and the patient's life depends. The stethoscope used less and the thermometer and common sense used more, would vastly better the present state of affairs, while of still greater benefit would be the imparting of these facts to our medical students who now have to wait until sad experience and unnecessary tragedies in the early years of their practice have taught them these essential points.

MORPHINE-ATROPINE, PITUITRIN AND ETHER IN OBSTETRICS.

BY JOHN F. MARTIN, M.D., BOSTON.

ANY method, in itself safe, which will alleviate the suffering and promote the termination of labor, is an aid both to the accoucheur and the parturient woman, particularly in cases where, for one reason or another, delivery is delayed.

Normal delivery ensues when labor terminates without accident to mother or child, prolonged delay, or instrumentation.

As labor is attended with concomitant pain, and often delay incident to disproportion, insufficient uterine contractions, rigid soft or bony parts, relief given to the patient is welcomed by her.

Dulling the sensory mechanism of the gravid uterus and overcoming cervical rigidity with such drugs as morphine, bromides, chloral, veratrum, and ether have their place, and their indications are known to the usual obstetrician. In easy, or purely normal deliveries, they are often made use of as in the fore-mentioned indications, and are of help, though sometimes a hindrance if unguardedly given.

The vogue of "twilight sleep," promulgated through press, home, and pulpit by the adherents of the morphine-scopolamine method of obstetrical treatment has received its numerous knocks from the advocates of conservative and safe therapeutics.

Allow a puerperal woman to become acquainted with a method which will obtund the sensation of pain, she is likely to mention the desirability of its use to her physician. It is for him to choose a procedure without endangering the safety of mother or child.

The increased risk of the "twilight" method is sufficient to make its use unappealing when the physician's armamentarium contains such

aids as morphine, pituitrin and ether. The marked susceptibility of some women to morphine-scopolamine medication, due principally to the effect of scopolamine, should deter one from too often using it, if at all.

It is the inherited right of every parturient woman to be given the most skillful, considerate, and mitigating attention by her physician, free from the inconsiderate use of forceps—often the result of impatience.

Enough has been written about the physiological effect of scopolamine (hyoscyne) to make the average physician conversant with its action. The objection to its use comes from its untoward effect upon both mother and child. Its depressing effect upon the respiratory centre tends to cause a lowering of the oxygen content of the blood, and such consequential calamities as asphyxia livida cannot be entirely due to the maternal depressive action of the compound, morphine-scopolamine, but also to fetal somatic inhibition.

It prolongs the second stage through its relaxing effect upon the uterine muscle, tending to post-partum hemorrhage; idiosyncrasy to the drug induces delirium, throat dryness, and muscular tremors, often alarming while they last. Why jeopardize safety for the sake of novelty?

A few women bear labor without much discomfort, others require a degree of sedation or relaxing, while the usual puerpera accepts pain amelioration with gratitude.

Morphine-atropine, the components of which are synergistic as well as antagonistic, produces sensory sedation, and given once or twice during first stage is of help, and the usual procedure.

The active principles of the posterior lobe of the pituitary gland, embodied in pituitrin and similar preparations, have demonstrated their usefulness in obstetrics through the physiological effect produced. The oxytocic action of pituitary products is due to the effect produced upon the uterine muscle in promoting contractions. Increased vascular tone, intestinal peristalsis, and diuresis are synchronous effects and assist the action of the principal means, as well as aiding to post-partum comfort.

Pituitrin should not be given during the first stage of labor, as it is distinctly contraindicated on account of the danger of uterine rupture, premature detachment of the placenta, and fetal strangulation. The time to give pituitrin is when the os is fully dilated, the presenting part engaged, with primary or secondary inertia, and the position anterior occiput.

From five to fifteen minutes after an injection of pituitrin is given subcutaneously, or intramuscularly, uterine contractions become more active, reaching the acme of continuous contraction. If the soft parts are not resistant, delivery is quite rapid; if resistance is met, the force behind must overcome it, then obstetrical ether, and holding back the head, prevents too rapid divulsion and laceration.

Some writers advise giving pituitrin when the head is engaged and the os admitting one or two fingers. It seems such procedure is permissible only in the absence of disproportion and soft os present.

Ether, given during the second stage of labor, induces a comforting degree of analgesia when inhaled at the onset of each pain; and, if the pains are strong, full anesthesia, as the head descends on the perineum, obtunds the consciousness so that, in many cases, birth is not felt at all. It is a far safer and better analgesic than the narcotic alkaloids during the second stage of labor.

Such an ideal result is often hampered by the relaxing of uterine contractions, due to the paralyzing effect of the anesthetic, particularly when a degree of inertia is present. Pituitrin given in such cases works well, hastens delivery, and allows full anesthesia during descent and birth of the presenting part.

A gush of blood often follows birth of child, due to "squeezing out" of uterine muscle. The after-birth is usually delivered more rapidly, and the patient goes through her delivery without untoward event.

Obstetrical ether alone, when contractions are good, is often sufficient; plus pituitrin, or similar preparations, when contractions are weak, and not contra-indicated, gives to them the deserving cognomen of "artificial forceps."

Clinical Department.

SUCCESSFUL USE OF INTERNAL SPLINTS IN A SEPTIC COMPOUND FRACTURE.

BY PEIRCE HENRY LEAVITT, M.D., BOSTON,

Resident Surgeon, Boston City Hospital.

[From the Wards of the Second Surgical Service,

F. B. LUND, M.D., Chief of Service.]

THIS case is reported in order to register the successful use of a bone plate in a septic compound fracture of the lower leg, and the value of constant irrigation, and the subsequent use of direct sunlight.

The patient, male, 34, laborer, while unloading heavy pieces of machinery, was struck on the right lower leg by a piece of machinery and sustained a compound fracture of the tibia at about its middle, a fractured fibula and fractured astragalus. The wound on the skin was not a $\frac{1}{4}$ -inch long.

There was also in this region a large abrasion of the skin, about the size of one's hand. The fracture was treated conservatively; that is, the

skin cleaned and the edges of wound cauterized. One cc. of 2% iodine injected into wound, and pillow and side splints applied.

This apparatus was taken down each day, and the abrasion treated. In 4-5 days the abrasion presented a mild sepsis. The temperature was normal until the 12th day when it rose to 100.5, the next morning it was 103.8 and the region of the fracture had become distinctly swollen, reddened, and very painful.

Since the fracture was transverse and muscle pull made it impossible to hold the ends in apposition, since after open reduction, a complete plaster, even if bivalved, would not allow a careful dressing of the now septic fracture, with the large area of denuded skin, it was decided that a bone plate would be the best means of approximating the ends. It was decided, also, that in view of the extent of surface to be dressed, a fractional plaster was indicated. Also that if a fractional plaster was used a fastening of the ends of bone together with some internal splint would be necessary to prevent the ends riding by. There is enough "give" in one of these plasters to permit it riding by, unless the ends of the bone are fastened to one another.

Catgut and kangaroo tendon are absorbed too early to be used.

Inasmuch as the sepsis would undoubtedly be present for six weeks, more or less, and as the presence of a bone plate would not interfere with the formation of involucrum and consequent fairly firm union, a bone plating of this septic fracture seemed indicated and was tried.

A bone plate was applied and screw holes were drilled diagonally down to the point of fracture in order to insure drainage of the septic material, between the approximated edges of bone.

The leg was put up in a fractional plaster. (That is, a plaster above the injury and one below to the toes, both connected by iron rods [|||] three in number.)

A crane was attached to the bed and the leg suspended about three inches above the bed. A constant irrigation of sodium citrate was maintained for 6 days and then a weak solution of iodine for 6 more days. A pan under the leg kept the bed from being constantly soaked. Figures 1 and 2.

The crane apparatus made it possible for the pa-

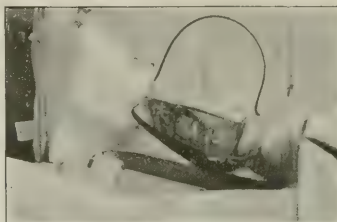


FIG. 2.
Showing apparatus in position.



FIG. 3.
X-ray shows Parham band in place 40 days after injury, 27 days after first splint was applied.



FIG. 1.



FIG. 4.
Shows patient able to stand on leg.



FIG. 5.
Shows slight posterior bowing.

tient to shift his position at will, with no pain to the leg. At the end of 27 days from application, the plate became loosened on account of sepsis in the screw holes; it was removed and a Parham band applied. Figure 3. There was at this time, about 2 x 1 inches of tibia exposed, and 3 x 4 inches of surrounding muscle. Exposure to direct sunlight was then started and kept up for six weeks.

Nine weeks after operation a large sequestrum was removed, and the skin area healed over more rapidly, without the aid of grafts. He was discharged from the hospital in May, with a light cast and crutches.

September, presents skin area flat and nearly healed in, and patient able to walk on foot. Lower leg shows slight posterior bowing. Figures 4, 5 and 6.

This case is of interest as showing the value of a bone plate in a case of septic compound fracture which was treated wide open. The ends of the fracture slid by so that they could not possibly be maintained by external apparatus without some form of internal splinting. In this case, at successive periods, both a Lane

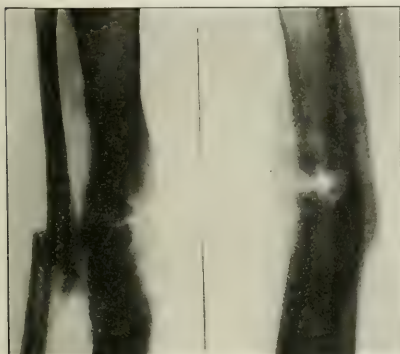


FIG. 6.
X-ray shows condition of bone in September, 6 months after injury.

plate and a Parham band were used, together with the external apparatus to hold the fracture until periosteal bone had formed around the large sequestrum, which really consisted of the portion of the bone to which the plate and band had been applied. When this sequestrum came out, the periosteal bone was strong enough to maintain the leg in position. The case was a very trying one, and it looked to several of us who saw it as if amputation would be necessary, but persistent employment of every possible means of treatment finally got a good result. The exposure to direct sunlight also seemed to have a good effect in this case. It illustrates that there may be advantage in the use of internal splinting in certain septic compound fractures.

Medical Progress.

PROGRESS OF SURGERY, 1916.

By J. B. BLAKE, M.D., and F. H. LAHEY, M.D.
BOSTON.

THE CARREL TREATMENT OF SEPTIC WOUNDS.

THE great war has emphasized certain surgical conditions and methods of treatment with such colossal figures and statistics, and the material which it offers as yet so incompletely studied, that final conclusions on war surgery cannot at present be formulated. This is true of gunshot wounds in general, of gunshot fractures and of sepsis. In the latter, however, the work of Carrel must be carefully reviewed, since it has been described by at least one eminent American surgeon as the "most important advance in surgery since the introduction of the x-ray."

Dr. Carrel has been with Dr. DePage, at the hospital at La Panne, for many months. It has been recently rumored that he has left La Panne or at least turned his attention to other problems, regarding the treatment of gunshot wound sepsis as settled. It seems to be the universal testimony of competent medical observers, who have had opportunity to see his work, that it is settled—at La Panne. But, conditions there present do not exist in other war hospitals, and cannot be attained at once in a majority of civil hospitals. At La Panne, cases are received very soon after the wounds have occurred; and surgeons, assistants and nurses of the highest qualifications are numerous and permanent; and supplies are unlimited. From experiences distant from La Panne, it seems probable that Carrel's method must yet be simplified if the general practitioner throughout the world is to equal his results: the present difficulties seem to be,—first, the solu-

tion itself, not at all easy to make, owing to varying qualities of its chemical ingredients; second, the method of administration, requiring often irrigation of wounds at two-hour intervals for long periods; and third, the skin irritation which to a greater or lesser degree seems to be present at some time in a majority of instances.

The underlying principles of Carrel's treatment are opening the wound to its uttermost extent and completely removing every smallest atom of foreign body: thorough hemostasis; very light gauze packing, and a continued irrigation with Dakin's solution. Tubes are led to the bottom of the wounds, and definite amounts of the solution are introduced at intervals (usually two hours) until clean granulations fill the wounds from the bottom: these granulations organize with astonishing rapidity, and huge wounds heal soundly in days,—wounds which formerly would be expected to require either weeks or even months for final cicatrization.

So essential is it, however, that each slightest detail shall be followed exactly, that Dr. Carrel's own letter to the *Journal of the American Medical Association* is here reproduced *verbatim*:

CARREL-DAKIN SOLUTION.

To the Editor:—I have just read in *The Journal*, Oct. 7, 1916, p. 1108, a short note about the formula for Dakin's solution. I believe that the answer will not allow your reader to obtain the proper kind of solution. Therefore, I take pleasure in sending you the description of the technic which is used in my hospital for the making of the solution.

A. CARREL, M.D.,

Hôpital Temporaire 21, Rond-Royal, Compiègne, France.

PREPARATION OF DAKIN'S SOLUTION (DAUFRESNE'S TECHNIC).

Dakin's solution is a solution of sodium hypochlorite for surgical use, the characteristics of which, established after numerous tests and a long practical experience, are as follows:

(a) *Complete Absence of Caustic Alkali.*—The absolute necessity for employing in the treatment of wounds a solution free from alkali hydroxid excludes the commercial Javel water, Labarraque's solution, and all the solutions prepared by any other procedure than the following:

(b) *Concentration.*—The concentration of sodium hypochlorite must be exactly between 0.45 and 0.50 per cent. Below 0.45 per cent. of hypochlorite the solution is not sufficiently active; above 0.50 per cent. it becomes irritating.

Chemicals Required for the Preparation.—Three chemical substances are indispensable to Dakin's solution: chlorinated lime, anhydrous sodium carbonate and sodium bicarbonate. Among these three products the latter two are of a practically adequate constancy, but this is

not the case with the first. Its content in active chlorin (decoloring chlorin) varies within wide limits, and it is absolutely indispensable to titrate before using it.

Titration of the Chlorinated Lime.—There must be on hand for this special purpose:

A 25 c.c. buret graduated in 0.1 c.c.

A pipet gaged for 10 cc.

A decinormal solution of sodium thiosulphate (hyposulphite).

This decinormal solution of sodium thiosulphate can be obtained in the market; it can also be prepared by dissolving 25 gm. of pure crystalline sodium thiosulphate in 1 liter of distilled water, and verifying by the decoloration of an equal volume of the decinormal solution of iodine by this solution. The iodine is prepared by dissolving 1.27 gm. iodine and 5 gm. potassium iodide in 100 c.c. of water.

The material for the dosage thus provided, a sample of the provision of chlorinated lime on hand is taken up either with a special sound or in small quantities from the mass, which then are carefully mixed.

Weigh out 20 gm. of this average sample, mix it as completely as possible with 1 liter of ordinary water, and leave it in contact for a few hours, agitating it from time to time. Filter.

Measure exactly with the gaged pipet 10 c.c. of the clear fluid; add to it 20 c.c. of a 1:10 solution of potassium iodide and 2 c.c. of acetic or hydrochloric acid. Drop, a drop at a time, into this mixture a decinormal solution of sodium thiosulphate until decoloration is complete.

The number of cubic centimeters of the hypochlorite solution required for complete decoloration, multiplied by 1.775, gives the weight of the active chlorin contained in 100 gm. of the chlorinated lime.

This figure being known, it is applied to the accompanying table, which will give the quantities of chlorinated lime, of sodium carbonate and of sodium bicarbonate which are to be employed to prepare 10 liters of Dakin's solution.

QUANTITIES OF INGREDIENTS FOR TEN LITERS OF DAKIN'S SOLUTION.

Titre of Chlorinated Lime.	Chlorinated Lime, Gm.	Anhydrous Sodium Carbonate, Gm.	Sodium Bicarbonate, Gm.
20	230	115	96
21	220	110	92
22	210	105	88
23	200	100	84
24	192	96	80
25	184	92	76
26	177	89	72
27	170	85	70
28	164	82	68
29	159	80	66
30	154	77	64
31	148	74	62
32	144	72	60
33	140	70	59
34	135	68	57
35	132	66	55
36	128	64	53
37	124	62	52

Example: If it required 16.6 c.c. of the decinormal solution of the sodium thiosulphate for complete decoloration, the titer of the chlorinated lime in active chlorine is:

$$16.6 \times 1.775 = 29.7 \text{ per cent.}$$

The quantities to be employed to prepare 10 liters of the solution will be in this case:

Chlorinated lime	154 gm.
Dry sodium carbonate.....	77 gm.
Sodium bicarbonate	62 gm.

If crystalline sodium carbonate is being used, then instead of the 80 gm. of dry carbonate it must be replaced by:

Crystalline sodium carbonate. 220 gm.

Preparation of Dakin's Solution.—To prepare 10 liters of the solution:

1. Weigh exactly the quantities of chlorinated lime, sodium carbonate and sodium bicarbonate which have been determined in the course of the preceding trial.

2. Place in a 12-liter jar the chlorinated lime and 5 liters of ordinary water, agitate vigorously for a few minutes, and leave in contact for from six to twelve hours; over night, for instance.

3. At the same time dissolve, cold, in the five other liters of water the sodium carbonate and the bicarbonate.

4. Pour all at once the solution of the sodium salts into the jar containing the maceration of chlorinated lime, agitate vigorously for a few moments, and leave it quiet to permit the calcium carbonate to settle as it forms. At the end of half an hour, siphon the liquid and filter it through double paper to obtain an entirely limpid product, which must be protected from light.

Light, in fact, alters quite rapidly solutions of hypochlorite, and it is indispensable to protect from its action the solutions which are to be preserved. The best way to realize these conditions is to keep the finished fluid in large wicker-covered demijohns of black glass.

Titration of Dakin's Solution.—It is a wise precaution to verify, from time to time, the titer of the solution. This titration utilizes the same material and the same chemical substances as are used to determine the active chlorine in the chlorinated lime:

Measure out 10 c.c. of the solution, add 20 c.c. of 1:10 solution of potassium iodid, and 2 c.c. of acetic or hydrochloric acid. Drop, a drop at a time, into this mixture a decinormal solution of sodium thiosulphate until decoloration is complete.

The number of cubic centimeters employed multiplied by 0.03725 will give the weight of the sodium hypochlorite contained in 100 c.c. of the solution.

A solution is correct when, under the conditions given above, from 12 to 13 c.c. of deci-

normal thiosulphate are required to complete the decoloration:

$$13 \times 0.03725 = 0.485 \text{ per cent. of NaOCl}$$

The Test for the Alkalinity of Dakin's Solution.—It is easy to differentiate the solution obtained by this procedure from the commercial hypochlorites and from Labarraque's solution:

Pour into a glass about 20 c.c. of the fluid, and drop on the surface a few centigrams of phenolphthalein in powdered form. Dakin's solution, correctly prepared, gives absolutely no change in tint, while in the same conditions Javel water and Labarraque's fluid give an intense red coloration which indicates in the latter two solutions the presence of free caustic sodium.

Apparatus Required for Sterilization of Wounds.—1. One liter bottles, the lower opening with an interior diameter of 7 mm.

2. Distributing tubes with one, two, three or four branches (Gentile).

3. Connecting tubes: (a) cylindric tubes, 2.5 cm. long, interior diameter 4 mm.; (b) cylindric tubes, 4 cm. long, interior diameter, 7 mm.; (c) Y tubes, interior diameter, 7 mm.

4. Mohr pinch-cocks.

5. Irrigating tubes. Drain tubes No. 30 (interior diameter, 7 mm.).

6. Connecting tubes. Drain tubes No. 16 (interior diameter, 4 mm.), closed at one end. Above this end these tubes are perforated with holes from 0.5 to 1 mm. in diameter:

(a) Tubes perforated for 5 cm., 30 cm. long; (b) Tubes perforated for 10 cm., 30 cm. long; (c) Tubes perforated for 15 cm., 40 cm. long; (d) Tubes perforated for 20 cm., 40 cm. long.

Whatever the trouble of making the solution and using this method may be, it is obvious that if sepsis can be entirely banished from any wound, and in a matter of days, the result is well worth the effort. But it is also to be hoped that the next six months will bring to us from Dr. Carrel a simpler and more rapid method of making the solution, and possibly of its application.

SHOCK AT THE FRONT.

It is in these days rare indeed that we have the pleasure of reading a medical monograph which is at once convincing as a simple solution of an important and perplexing problem, and is also a narrative of great interest, holding the attention by its vivid directness, its almost to be regretted brevity and its charming and faultless English style. Professor Porter's contribution on shock should be reproduced here again in full, but as it appeared only a few weeks ago in this JOURNAL (December 14th, 1916) students of all ages are referred to it direct for reading and re-reading. Prof. Porter has attacked one of the most complicated of all surgical problems (and accord-

ing to his own observations, one which is in France, at least, very fatal), a subject of which many, most involved and often almost unintelligible explanations have been offered; he has studied it by numerous animal experiments; has developed a simple and adequate and convincing theory, both of its causation and of its treatment; and has then verified his observations and conclusions upon the soldiers at the front. Shock, he says, results from a subtraction of blood from important centers; either by bleeding outside the body, into body cavities, or into the great veins of the portal system (which can contain nearly three times the entire blood bulk); for practical purposes, therefore, shock is hemorrhage and hemorrhage is shock, and treatment is direct and rational.

This monograph reemphasizes the fact that the final explanation of what seem to be even the most complicated processes, is usually simple and brief; and it is interesting to recall that Fitz's monograph on Appendicitis, which appeared in 1887, and is perhaps the most important and far-reaching contribution made to the world by American Medicine since October 12th, 1846, is summarized by the author in less than ten lines of print. Prof. Porter's conclusions are not much longer.

"From a practical standpoint, shock exists when the diastolic pressure is 60 m.m. or less. The blood then accumulates in the portal veins, the activity of the heart is impaired, and the nutrition of the nerve cells is affected.

The treatment of shock requires:

1st. A special position of the wounded; the abdominal vessels should be higher than the heart and the brain.

2d. Heat.

3d. Intravenous injections of normal salt solution.

4th. Intravenous injections of adrenalin.

5th. The transfusion of blood, in certain cases.

6th. The taking of the diastolic pressure every half hour."

These brief conclusions are elaborated under each number, at the end of the article: another reason why they are not printed here in full, is that the entire brief monograph should be read and studied by everyone who has at any time had to deal with and treat shock.*

HEART AND PERICARDIUM.

Foreign Bodies in the Heart:

There have been several cases reported in which foreign bodies have been removed from the heart. Death has resulted in most of the cases, but since projectiles have not been well tolerated in the heart, the results of operative treatment are on the whole better than those of non-interference.

Ascoli and Masserini: *Clin. Chir.*, 1916, page

* A further contribution on this subject by Dr. Porter was published in the issue of the JOURNAL for Feb. 15, 1917.—Editor.

377. xxiv, and *Surgery, Gynecology and Obstetrics*, November, 1916, page 453.

Bichat: *Bullet. Mem. Soc. de Chir. de Paris*, 1916, xliii, 1100; *Surgery, Gynec. and Obstet.*, November, 1916, page 453.

Silvan: *Biforma Med.*, 1916, xxxii, 297.

Villeon: P. de la, Three Juxtacardiac Projectiles; extracted; recovery. *Bullet. Mem. Soc. de Chir. de Paris*, 1916, xlii, 998.

Leriche: *Rev. de Chir.*, 1916, xxxv, 274.

Conrand and Bellot: *Rev. de Chir.*, 1915, xxxiv, 433.

Coleman, M. J.: *Maryland Med. Jour.*, 1916, lix, 42.

Suppurative Pericarditis:

S. B. Rhodes, in the *Annals of Surgery*, condemns the use of the exploratory aspirating needle in cases of suppurative pericarditis for the following reasons: traverses normal pleura in entering the pericardial sac and results in empyema; heart is easily punctured; exudate may be too thick to pass through needle, and is unnecessary as a diagnostic aid, x-ray, leucocytosis and temperature chart being sufficient.

"A resection of one costal cartilage followed by pericardiectomy, or aspiration of the pericardium, under direct inspection is not a serious procedure, and should be the method of choice."

The mortality in 86 collected cases was 47.7%.

It is advised that drainage be maintained for a considerable length of time.

Rhodes, G. B.: *Ann. Surg.*, Phila., Dec. 1915, lxii, 660, Suppurative Pericarditis.

Yates, W. N.: *J. Mo. St. M. Ass.*, 1916, xiii, 29, Injury with Extravasation of Blood in the Pericardium.

E. H. Pool and M. A. Ramirez in *American Journal of Medical Science*, 1915, report the results of 21 cases of cardiorrhaphy; 9 healed without complications, the remaining 12 showing pneumonia, empyema, pericarditis, pleurisy and pneumothorax.

Local Anaesthesia:

Novocaine is the local anaesthetic of choice for the following reasons: It is not irritating to the tissues, may be sterilized without losing its effectiveness, and is but feebly, if at all, toxic. It is questionable whether it is necessary to sterilize it when used only as a local anaesthetic, as one of us has made use of it unsterilized in over one hundred goitre operations without any infection. Novocaine is not as satisfactory when used on mucous membranes as is cocaine.

Because of the difficulty during the past year in obtaining novocaine, both of us and our house surgeon have made use of the local anaesthetic, apothesine, not yet upon the market, and have found it practically as satisfactory as novocaine. It is the impression of one of us who has used it in three goitre operations that its anaesthetic effect is not as lasting as that of novocaine.

Regarding the percentage of the novocaine, one of us has for a considerable time been employing a 2% solution in operations upon the thyroid, and feels that there is an increasing tendency on the part of those previously using a 0.5% to make use of the solution of higher percentage. He has had no toxic symptoms appear in a large series of cases in which solutions of this percentage were used.

The advantage of the 2% solution is that no wait is necessary before the operation is begun, and anaesthesia is complete in the area injected.

Quinine and urea hydrochlorid, because of the occasional irritation produced by it in the tissues and consequent slough, has received less favorable mention in the literature of the past year, and would seem to have lost some of its popularity of a year ago.

Society Reports.

THE PHILADELPHIA COUNTY MEDICAL SOCIETY; DEPARTMENT OF PUBLIC HEALTH AND CHARITIES; CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

CONTINUED MEETING HELD IN WITHERSPOON HALL, FRIDAY, OCT. 27, 1916, AT 8 P.M.

DR. FRED B. LUND, President of the Clinical Congress of Surgeons of North America, in the chair.

CARE OF THE TEETH.

(Illustrated by lantern and cinematograph.)

DR. WESTON A. PRICE, Cleveland: I wish to express my personal appreciation and that of my profession for this opportunity of coöperation in research work. Three great truths have come to the medical and dental professions within the past decade. Probably no truth since the discovery of the circulation of the blood has been of greater significance to humanity than the discovery of the relation of focal infection to localized and systemic disease. The second new truth is that of the ability of organisms to localize in certain tissues of the body,—tissue electivity. For example, when a child has the mumps you realize that the organism has an electivity for the parotid gland. Other organisms similarly will attack the spinal cord and produce nervous disorders. The third new truth is that of the ability of the organism to live with certain characteristics; we may call it bio-chemical reaction. Such an organism may acquire electivity for certain tissues without getting into the system, and may reside in an environment surrounded by tissues and in which oxygen is scant. Such is the condition existing in a periapical abscess at the end of a root of a tooth. The organism most to be feared is not the one attacking you with virulent disease upon entering your system, but that which lives almost as a parasite, producing no local irritation, but through a long series of

years developing arthritis or various other lesions. We have had many cases of arthritis relieved by no other treatment than that directed to the periapical abscess. In Rosenow's study of tissue electivity he found that in 68 per cent. the organism taken from the appendix selected the appendix when injected into rabbits, and that very few of the rabbits had the organism in other tissues of the body. Of organisms taken from ulcer of the stomach 60 per cent. selected the duodenum; in gallstone infection, 80 per cent. selected the gall-bladder; in anterior poliomyelitis 78 per cent. selected the spinal cord. When we remember that 90 per cent. of people die because their resistance is lower than the attacking power of the organisms we appreciate the value of the elimination of every possible source of focal infection.

DIAGNOSIS OF CANCER.

(Lantern slide illustrations.)

DR. JOSEPH C. BLOODGOOD, Baltimore: The diagnosis of cancer means its recognition. If we can recognize the disease at a period when the chances of a cure are 25 per cent., that diagnosis is not highly valuable. Experience shows that, left to ourselves, doctors as well as laymen, men and women,—left to ourselves,—we shall come to the recognition that something is the matter with us, and we shall seek help with the chances of 25 per cent. cure. But the medical profession now has the knowledge to give you which will allow you, yourself, to recognize the beginning of cancer, and then if you will seek help, the chances of a cure are almost 100 per cent. So that we can truthfully say that the only cure for cancer today is information. So far as we know, cancer is not a hereditary disease; it is not a blood disease. Cancer is not contagious or infectious. No matter how much power we give the Public Health Department, national, state, or county, it cannot protect you from cancer as it can from typhoid fever; nor have we any reason to believe—although we may indulge the hope—that we have any antitoxin to protect you from cancer. And, when cancer is fully developed, the greatest art in surgery can offer you only 25 per cent. of cure. So far as we know, cancer never begins as cancer, but as something which may be cancer. If you will listen to the warning given in this way you have almost 100 per cent. chance of prevention. Cancer is so rare in children that we may eliminate its consideration with them; but, almost 80,000 adults die of cancer every year. In these the disease is distributed mainly into four great regions: the skin; breast of women; the uterus; stomach and large bowel. Regarding cancer of the skin the question of importance is whether the little mole or other skin condition is the kind of thing which should be removed. A great many of these you may carry to your grave; but, there are a few which, if left alone, will carry you to your grave. Regarding cancer of the breast we must teach a woman that if she feels something in her breast on Monday which was not there on Sunday that is a warning, and that if it be cancer, and she heeds the warning, her chances of cure are 96 per cent. All she sacrifices is the incurring of the slight deformity which is insignificant compared with death from cancer. In getting this information to the millions of women we need the coöperation of the newspapers, with at

the same time exclusion from their columns of the advertisement of quack cancer cures. By our experience at Johns Hopkins we know that information in regard to a lump in the breast is increasing the number of cures. Injury during childbirth is the chief cause of cancer of the uterus. Every woman knows whether her normal functions are regular or irregular; if there is the slightest change she should seek advice. Doctors, at least, can protect their wives from cancer of the uterus, and the medical profession can likewise protect the mothers of the country from cancer of the uterus. Cancer of the abdomen forms a more difficult problem. Here, too, are needed a little common sense, a little courage, and a little knowledge. Whenever a man or woman has a new sensation about the abdominal parts of the body they should give it heed. Rarely do we find cancer of the tongue or lip except in smokers. If, therefore, men smoke, let them keep their mouths clean. If they have a burn or white patch on the lip, they should stop smoking. (The subject was graphically illustrated by lantern slides.)

DESCRIPTION AND ILLUSTRATION OF CURABLE DEFORMITIES AND THE IMPORTANCE OF THEIR PROPER TREATMENT.

(Lantern slide illustration.)

DR. ROBERT W. LOVETT, Boston: There is much of interest that might be said from a literary and historical point of view regarding the subject of deformity. The humpback has been considered as conferring luck upon those who touched his hump; the court jester was misshapen and many noted men have been physically imperfect. Alexander the Great is said to have had a wry neck; Lord Byron had a club-foot and Sir Walter Scott was lame from an attack of infantile paralysis occurring when a child. Deformities in general may be divided into: (1) the so-called congenital; (2) those due to disease, of which there are three main varieties: (a) those due to tuberculosis; (b) rickets; (c) infantile paralysis. While these are not preventable, their excessive development is as a rule due to neglect and bad treatment. In the third class of deformities we find those caused by our somewhat over-civilized habits; for example, distortions of the feet, round shoulders and faulty attitude and lateral curvature of the spine, attributable respectively to badly shaped shoes, improper clothing, improper school furniture, overwork and unfavorable environment. Lantern slides of the three classes of deformities are shown. Bowlegs, often attributed to too early walking, are practically invariably due to rickets. The deformities of infantile paralysis are, as a rule, to be prevented by surgical treatment during the acute and convalescent stage. When the disease does not affect the spine or shoulder, deformities are to be prevented and in nearly all instances are remedial by operation. One intrinsic difficulty with the human skeleton predisposing toward round shoulders is that it is a quadruped skeleton set on end. Perhaps the most prolific cause of this deformity is the manner in which young children are clothed with the waist with straps passing over the shoulders and the side elastics fastened to the stockings. Lateral curvature of the spine in the severe or structural form is of four varieties: (1) (congenital);

(2) that due to rickets; (3) to infantile paralysis; (4) to emphysema. These forms are not as a rule preventable. With respect to deformities caused by badly shaped shoes the matter seems discouraging upon reflection that pointed toed shoes were prominent in the reign of Richard II., and are as bad today as in any previous period. Deformity begins early and consists of displacement inward of the great toe so that practically the right relation never exists in the adult. The little toes are crowded together and lose their motion, with resultant poor muscles and a misshapen foot. While the heel was originally designed to keep the boot out of the mud it has attained such an absurd height that a normal gait is impossible. Having made a very earnest and time-consuming endeavor toward the adoption of a really good shoe I have come back to a rather pessimistic attitude toward any radical reform in this cause of deformity. I hope I may have enlisted your interest sufficiently to have you observe your own children and those outside of your family in the prevention of certain obviously preventable deformities. Such effort I believe would raise the efficiency of the community.

BOSTON ASSOCIATION FOR RELIEF AND CONTROL OF TUBERCULOSIS.

THIRTEENTH ANNUAL MEETING.

THE thirteenth annual meeting of the Boston Association for the Relief and Control of Tuberculosis was held in this city on Friday, November 10, 1916. In his introductory remarks, Dr. Arthur K. Stone, president of the Association, emphasized the efforts that are being made to secure coöperation among the various agencies interested in the fight against tuberculosis.

He said the most important work at the present time is with the general public in showing them how to avoid tuberculosis and pointed out their duty to support the city and state departments in their efforts to care for those afflicted and their preventive work among those families in danger of contracting the disease. Employers of labor, labor unions and legislators have a grave responsibility in this campaign.

Dr. Stone called attention to the fact that the Municipal Tuberculosis Department has this year added 140 new beds to its hospital at Mattapan and there should be no uncare for cases in the city. Boston has about 1100 deaths per year from tuberculosis. This means that there is a new crop of children being infected. He called attention to the fact that the Hospital Department needs a new Out-patient Department, the present quarters being greatly overcrowded. It also needs more nurses to visit afflicted families for preventive reasons. Connected with this Out-patient Department Dr. Stone says he hopes the Mayor and Council will grant this request of the Consumptives' Hospital Department.

Mr. Seymour H. Stone, secretary of the Association, submitted the following annual report.

EDUCATIONAL.

In opening this report, mention should be made, first of all, of two co-operative efforts with other

agencies that were a part of the educational work of the Association this year.

Committee on Healthgrams.

The first was the organization by the State Department of Health, the Boston Health Department, and the Women's Municipal League and this Association of a joint committee, for the purpose of preparing and distributing healthgrams in stores, railroad and elevated stations, steamboat wharves, hotels, restaurants and lodging houses. Five different sets have been issued, to the total number of 1,650. The Women's Municipal League and this Association have assumed the expense, and with the aid of the Boston Health Department and the Boy Scouts of America, have distributed the cards at intervals of about four weeks.

Second Committee on Park Shows.

This committee, by means of free motion picture shows in the parks, has been very successful in bringing information regarding health before the public. Sixteen organizations interested in health and civic betterment formed the committee that had these shows in charge, and with the co-operation of the Park and Recreation Department and the Boston Health Department were able, this summer, to give thirty-six performances to about 76,000 people at an expense of \$1,107.90

Lectures, Slides and Films.

Reaching the public by means of lectures continues to be a part of the Association's work, although this method is coming more and more into competition with the motion picture film.

Thirty-two talks have been given, eighteen of these were delivered by the Secretary of the Health in Industry Committee.

The Association owns one film "The Awakening of John Bond" which was used in connection with the Park Shows, and was also loaned for use in other parts of the State. A new film in two reels, "The Great Truth," prepared by the National Association for the Study and Prevention of Tuberculosis, has been recently purchased, and was ready for use about the first of December.

Literature.

Over 47,000 pieces of literature in English and foreign languages have been distributed.

Exhibits.

The Association has three exhibits. The Health in Industry exhibit has been in nearly constant use, not only in Boston, at such places as the Public Library, City Club, and the Chamber of Commerce, but also in ten other cities of the state. The Open Air School exhibit, consisting of about 100 photographs of such schools collected from different parts of the country, has also been used outside of the city. The school exhibit has been used since March in connection with the Health Unit of the City Health Department at 17 Blossom Street. These exhibits have been seen by approximately 150,000 people.

HEALTH IN INDUSTRY COMMITTEE.

The second year's work of this committee has been very encouraging. The publicity given to the work by the Chamber of Commerce Journal, the trade journals and the newspapers, with the talks by the secretary of the committee and the display of the exhibit, has aroused much interest in what the committee is trying to accomplish.

The committee has assisted in establishing nursing service in four factories, two of which manufacture candy, one electrical supplies and one rubber clothing. One large laundry has also established such a service, and similar plans are now under way for other factories and groups of factories.

The secretary has given eighteen noonday health talks to a total of about 1000 employees, the exhibit has been shown in nineteen different places and seen by about 130,000 people, and 6000 educational leaflets have been distributed at exhibits and lectures.

In this connection it is interesting to note the value attached by insurance companies to nursing work in factories. The Massachusetts Rating and Inspection Bureau has established a special rate to firms employing approved nurses and installing properly equipped emergency rooms.

CLOTHING COMMITTEE.

The first of the year the Association was asked to assist in securing clothing for needy patients who were entering the state sanatoria. This problem seemed to involve not only patients going to sanatoria, but patients already in these institutions and their families outside.

In order to determine just how this matter should be handled, the executive committee appointed a special committee with one of its members as chairman. As the problem was mainly one of relief, it was thought best to appoint as the other members of the committee the executives of five relief societies and a member of the staff of the Boston Consumptives' Hospital Out-patient Department.

That the study might be made as thorough as possible the committee employed on part time a paid secretary and suggested to the Boston Consumptives' Hospital Out-patient Department that they refer to the secretary of this committee the cases of all patients for whom clothing could not be procured. A careful investigation was then made to determine if the resources of the family were such as to furnish what was necessary. If this was impossible an appeal was made to a relief agency.

The conclusions arrived at in this matter of clothing are based on only sixteen cases, since that is all that were referred to the committee. It is doubtful, however, whether a larger number would have affected the conclusions. From these few cases it would appear that where the Boston Consumptives' Hospital nurses are not able to secure the needed clothing, the matter can usually be solved through the confidential exchange of information.

The most difficult cases to handle are those legitimate public charges whom the private relief agencies feel should be aided by public relief, but the state authorities, on their side, assured the committee that no patient need stay away from a sanatorium because of a lack of clothing.

The committee recommends the constant use of the confidential exchange of information; a fuller co-operation between nurses and relief agencies; and the extension of the public relief department's work to handle the cases that are obviously public charges.

PRENDERGAST CAMP.

Prendergast Camp has had its fourteen beds occupied all the time. The greater number of these patients are waiting to be admitted to one of the

state sanatoria, some of them having to wait as long as three months before gaining admission.

A total of 130 patients have applied for accommodation at the Camp during the year, and 85 cared for. Of this number 28 have been at the Camp free of charge, the other 57 paying from \$2.00 to \$8.00 a week for board and lodging. Although the cost of food-stuffs has advanced we have maintained the price of board and lodging to those able to pay, at \$8.00 per week.

MAVERICK DISPENSARY.

The Association, in co-operation with the Maverick Dispensary, East Boston, and the Boston Consumptives' Hospital Out-patient Department, continued the experiment of a branch tuberculosis clinic at this dispensary until October 15th of this year. At this clinic many patients who were not inclined to travel the distance to the Out-patient Department of the Boston Consumptives' Hospital could be successfully examined near home, and the Association believes it most desirable for the Boston Consumptives' Hospital Department to open similar clinics in different parts of the city, particularly in the outlying sections, for the accommodation of those who are unable or unwilling to go to the central clinic. By this plan it should be possible to discover many early and curable cases. We understand that the Boston Consumptives' Hospital Department is to open such a clinic at the Health Unit, 17 Blossom Street, West End.

From the opening of the Clinic at the Maverick Dispensary, July 13, 1915, to the time of its closing, October 15, 1916, we have the following facts to report.

* Number of clinic days	62
Total patients	269
Average patients per day	4.34*
Under 15 years of age	161
Over 15 years of age	108
Positive	46
Doubtful	15
Negative	208

* New patients

It is interesting to note that 60% of those attending the clinic were children 15 years and under.

BOSTON CONSUMPTIVES' HOSPITAL.

Knowing the great need of the Boston Consumptives' Hospital Department for more Out-patient nurses to visit cases in their homes, the Association did what it could to assist the Department to obtain an addition to its force of seven nurses. The Department, however, has been allowed only four more such nurses. By corresponding with the heads of organizations interested in nursing throughout the country we found their opinion to be that a nurse should supervise not more than 100 patients. The nurses at the Boston Consumptives' Hospital Out-patient Department are caring for many more than this number, and the Department should be supplied with additional nurses if a high standard of work is to be obtained.

During the year a new hospital ward, a new cottage ward, and an addition to a cottage ward, in all of which the Association was interested, were completed at the Hospital at Mattapan, thereby adding 140 beds and bringing the total number of beds up to 403.

LEGISLATION.

During the year the Association considered 41 legislative bills, 29 being approved. Eighteen of these became laws.

Two commissions, the work of which will be of interest to the Association, were appointed by the Legislature, one to study and report on non-pulmonary tuberculosis, and the other on social, or health, insurance.

Perhaps the most important bill, so far as the Association was concerned, was a measure requiring counties to build tuberculosis hospitals to accommodate patients in communities of less than 50,000 inhabitants. This bill, which became a law, amended the law requiring all cities to build tuberculosis hospitals, the requirement now applying only to cities of 50,000 inhabitants or over. Thus the cities of 50,000 inhabitants or over take care of their own hospital patients, while the county provides for such patients in the smaller communities.

The Association also considered three proposed Federal laws:—The first of these is the Federal Subsidy Bill, commonly called the Kent Bill, which would provide a Federal subsidy for local tuberculosis hospitals. The Association voted to disapprove this measure because it believes a more exhaustive study should be given to the subject before this method is adopted. The Association, however, is heartily in favor of the establishment of a Division of Tuberculosis in the United States Public Health Service.

CONCLUSIONS.

The death rate from pulmonary tuberculosis in this city has dropped to 130 per 100,000 inhabitants in 1915. Nevertheless, the total number of deaths from this disease last year was 1038, which means, conservatively, that there are in Boston at least from 8,000 to 10,000 persons suffering from the scourge.

Tuberculosis is a preventable disease. In fighting it we come closely into touch with problems involving living and working conditions which should not be tolerated by an enlightened community. But these conditions will not be bettered until we have the co-operation of the public, until the people themselves are aroused to demand decent and healthful surroundings and to seek proper food, recreation and pure air to breathe. It is the purpose of this Association to point out how these things may be found.

SEYMOUR H. STONE, *Secretary.*

The following officers of the Association were elected for the ensuing year: president, Dr. Arthur K. Stone; vice-president, Mr. Babson S. Ladd; treasurer, Mr. George S. Mumford; secretary, Mr. Seymour H. Stone; clerk, Miss Isabel F. Hyams.

The first paper of the afternoon was presented by Dr. Edward R. Baldwin of Saranac Lake, N. Y., president of the National Association for the Study and Prevention of Tuberculosis. Dr. Baldwin discussed tuberculosis from the medical standpoint as follows:—

TUBERCULOSIS FROM THE MEDICAL STANDPOINT.

How do physicians view tuberculosis?

It depends quite certainly on the group to which they belong in medical circles.

Physicians can be classified, and in relation to this subject cannot be considered as one body, contrary to prevailing custom. They may be good, bad and indifferent, very much as other people, and one cannot readily standardize them by their attitude toward tuberculosis.

As a general statement, I believe that the best elements in our profession are sympathetic with efforts to control tuberculosis and honestly try to make early diagnoses. They realize the futility of medicinal treatment and know too well the frequency of relapse to be unduly optimistic about heralded specifics. Hopes have been raised high at times and they, with the laity, have been misled. It is not too much to say that at present many physicians have a more lukewarm interest because of disappointments in the so-called scientific methods of therapy in tuberculosis. They really expected too much. A more careful consideration of tuberculosis as a disease, a deeper insight into its remote causes or the changes wrought in the lungs, should have made them gratified with the best results now obtainable. I do not say satisfied, but yet they should be more cheerful.

Many good physicians have had an unwarranted dread of contact with tuberculosis, fearing infection. They are constantly asking questions that show a drift of mind in this direction.

This, I believe to be an incident in the publicity campaign for prevention. It will pass, with the greater emphasis being placed on childhood infection, and realization of the increasing resistance in adult age.

Many of our progressive physicians are enrolled in anti-tuberculosis associations and are alert for every new development in diagnosis and treatment. If they are not known as leaders in public activities it is not from lack of interest, but from their constantly engrossing grind of daily practice, or their unwillingness to be exploited in the press to the undoing of a well-grounded professional standing. This class of men is influential in a quiet way, and to many laymen appear in a bad light because they do not create more noise. There is much to be said in their favor, in my judgment. They must be careful students, and propagandists are not usually of that class. We need both, however.

It is deplorable to admit that a certain number of practitioners are so indifferent or skeptical, if not actually hostile, to any efforts to control tuberculosis, that the conclusion is definite that the real reason is only the selfish one of interference with their practice.

When the overcrowded medical ranks and the low-grade competition shall have lessened, early diagnosis and prompt measures of protection for the family will be more common. A large number of medical men are today honestly endeavoring to be careful not to overlook this disease, and will in the future be obliged by the insistence of the patient himself to give time to such examinations. It is not hard to understand the natural reluctance of such men to lose their patients to some sanatorium when their fees thereby cease. It is quite too much of a strain on average human nature, therefore, for a considerable section of the medical body actively to support energetic measures to lessen their practice.

It is to the credit of the profession that the majority can be depended upon to help, if tactfully approached, yet too much must not be expected of the commercially-inclined doctor.

A noticeable difference in the viewpoint of physicians toward the early diagnosis of tuberculosis is seen of late. Taunted and denounced as they have been for neglecting to diagnose it early, suspected cases are more and more brought under treatment.

These patients are often puzzling to the specialist because it is difficult to determine whether or not they need treatment, granted that they have had the disease, which is itself not easy to prove in some cases.

There is hope that some test may be devised to assist us in deciding these questions. The medical profession needs more allowance made for it as a body, because its advances in knowledge are often painfully slow.

The second paper by Mr. Homer Folks, secretary of the New York State Charities Aid Association, dealt with tuberculosis from the social standpoint.

TUBERCULOSIS FROM THE SOCIAL POINT OF VIEW.

ABSTRACT. The social point of view is, I suppose, simply the human point of view. Looking at tuberculosis simply as a human problem and trying to forget for a moment the things we have all been saying about tuberculosis in the last decade, the outstanding fact which impresses me most is its tragedy. Sickness and death are the sombre facts of life. Utopias are out of fashion. When we compare our present life with that which we would like to have and analyze the difference, it is summed up to a surprising degree in these two things—illness and premature death—and tuberculosis is just another way of saying the same thing, or a large part of it. A friend who has just returned from France said that the striking fact was that nearly everybody was dressed in black. If everybody who has lost a relative from tuberculosis dressed in black, New York and Boston, and every American city, village and hamlet would take on a sombre appearance. Those who have given up their dear ones to the cause of their country have some satisfaction. Those whose loved ones have been taken by tuberculosis have none. Those who have died on the battlefield do so willingly; those who die of tuberculosis, do so because they have to. I often think of the difference between the life of our great Southern cities in mid-summer as I read of it in my boyhood days, when yellow fever stalked abroad and the entire economic and social life of the place was disorganized, and at present, when the disease has been practically forgotten. It is hard for us to realize how greatly the social and economic life of New York and Boston would be changed if tuberculosis were eliminated.

While to me the most urgent call to anti-tuberculosis work is that of suffering, it is also true that every consideration of sound social progress, of conservation of human resources, of good business, make the same appeal.

Occasionally somebody says that people are getting tired of the tuberculosis movement. This simply means that for the moment we have allowed them to forget the plain, human side of the question and have caused them to think about hospitals and dispensaries and bacilli rather than about human beings.

Two or three facts seem to me to stand out in observing what has been done in the effort to deal with tuberculosis from a broad social point of view. One is the fact that the kind of medical treatment which a great majority of the poor and the working people get outside of hospitals does not amount to much. Sometimes the soft pedal is put on when we begin to speak of this, but I see no reason why we should not face the fact and all work together

to better conditions in this respect. The medical profession is not an exception in this regard. The kind of service which the poor and the working people get from other professions, say the legal and the clerical, is also not of a very high order. The one professional service which seems to me to measure up to some kind of a fair standard for all classes of people is that of teaching. This also is the only one which is organized on a community basis. Speed the day when the medical profession will be as well organized and as generally efficient and socially useful as our teachers!

Another fact which stands out in our experience is the value of continuous, voluntary organized interest. Some question, I believe, has been raised in Boston and Massachusetts as to the necessity of the continued existence of a voluntary organization for the prevention of tuberculosis. It would never occur to anybody in New York to raise that question. Efficient public service on the part of the State, the municipalities and the other public authorities needs the active and continuous support of private agencies. The Governor of our State alluded to the cooperation between the State Department of Health and the private agencies concerned in the prevention of tuberculosis as a particularly fine illustration of effective cooperation between State and private agencies, and he expressed the wish that other departments of the State government generally might have some such organized support. The functions which such a voluntary organization may wisely perform will differ considerably from year to year, even from month to month, with the changes in the political and administrative situation. Always it will be that of organized support of public authorities who have tried to measure up to their jobs, of promoting the enactment of good legislation and striving to prevent the enactment of that which is bad; of helping to create an informed public opinion which will favor the appropriation of adequate sums for the adequate performance of public health duties, and of acting at times, as it were, as a lubricant, or as a disturber of the peace when public administration tends to fall into routine and tradition—and all public administration does tend from time to time in that direction. Personally I am always disinclined to see private agencies assume permanent executive functions, such as the maintenance of hospitals, dispensaries, nurses, etc. Often it is necessary that they do pioneer work in these lines, but we in New York, at least, always feel more comfortable and encouraged when we see these continuing duties taken over by public authorities, leaving the private agencies to break new ground and to act in an advisory and cooperative manner.

REFERENDUM. Tuberculosis is often the supreme test of the character of an individual. He may recover, or at least retain his usefulness, if he can exercise a continuous self-control under exceptionally trying circumstances. In a sense, this is equally true of the community. The tuberculosis movement is a tremendous test of the efficiency of our social organization. It is not an easy thing to which we have put our shoulders. All the facts which called for the organization of the movement are still operative. The need is as great, the weapons are better and our knowledge more complete. The question is, have we the administrative skill, the possibility of continued interest in a vital human problem, the willingness to provide the necessary

funds, the patience to adhere to a policy of demonstrated usefulness? I am not one of those who feel any discouragement over the outcome of our efforts. We do not know that Christianity is a failure, said some one, because it has never been tried. We do not know that our present methods for the control of tuberculosis are in any respect a failure because they have nowhere been put really and fully into effect. When we have done what we are doing now, only on a much larger scale, on a really adequate basis and over a considerable term of years, then we shall be in a position to pass judgment on the results accomplished.

One interesting fact as to the social aspect of tuberculosis which can now be said to have been conclusively established is this: that communities of all kinds, urban, rural and mixed, are willing to tax themselves to pay for proper care of all the tuberculous when the matter is put before them. In the State of New York in the last three years, ten different counties, with populations ranging from 25,000 to 125,000 have voted at the polls on the question of appropriations for the construction of county tuberculosis hospitals. In every instance, a majority of the voters have voted for building the hospitals and for appropriating specific sums therefor. The total sums so voted amount to a little less than \$1,000,000; the number of persons who have voted on the subject to 138,000, and the combined majorities amount to nearly 35,000.

The third paper of the afternoon was by Dr. Lee K. Frankel, of New York, who, in considering tuberculosis from the industrial standpoint, stated it as his belief that industry must be taught its responsibility in the matter of occupational diseases and that these diseases should be made the subject of expert private or governmental study.

BOSTON SURGICAL SOCIETY.

(INCORPORATED.)

MEETING No. 16.

A CLINICAL meeting of the Boston Surgical Society was held on Monday, February 5, 1917, at the Massachusetts General Hospital, at 10 a.m.

Dr. R. B. Greenough demonstrated a case of hemangioma of the penis, and a post-operative case of carcinoma of the tongue in which an extensive dissection of the neck had been done, with division of the jaw: reunion of the bone fragments by bone plates. Patient has returned to the hospital for removal of the bone plates.

Dr. E. H. Risley (by invitation) spoke of the treatment of burns and demonstrated a case of burn of the foot, treated by tincture of ferric chloride.

Dr. W. Denis (by invitation) spoke of the analysis of "ambrine," and demonstrated a preparation essentially the same as "ambrine," prepared by her in the laboratory at very small expense.

Dr. Hugh Williams demonstrated a specimen of cystic spleen removed by him.

Drs. G. W. W. Brewster and H. F. Hartwell

spoke of the relation of gastric ulcer and cancer and showed microscopic specimens of a border-line case.

Dr. C. A. Porter demonstrated a case of enchondroma of the shoulder, with resection of the upper third of the humerus and implantation of the fibula in its place.

Dr. C. A. Porter and Dr. J. H. Wright demonstrated a case of Madura foot.

Dr. H. P. Mosher demonstrated a number of esophageal instruments devised for the purpose of cutting the septa of esophageal pouches, and related three cases in which this operation has resulted successfully. He spoke of the tests for labyrinthine disease and demonstrated a revolving chair used for this purpose.

Dr. E. G. Brackett spoke of the operative treatment of ununited fracture of the neck of the femur, and demonstrated cases.

The following operations were performed by members of the Surgical Staff of the Hospital:

Dr. PORTER. Excision and curettage for Madura foot.

Dr. SCUDDER. Excision of ulcer of the lesser curvature of the stomach, with posterior gastroenterostomy.

Dr. BREWSTER. Exploratory laparotomy in a case with symptoms suggestive of gastric ulcer: cirrhosis of the liver was found.

Dr. COBB. Cholecystectomy in a case of cholecystitis with gall-stones.

Dr. WILLIAMS. Cholecystectomy in a case of persistent sinus following a previous cholecystectomy.

Dr. GREENOUGH. Radical excision of the breast for carcinoma, with dissection of the axilla.

Dr. DAVIS. Closure of caecostomy wound in a case in which caecostomy had been done for relief of acute intestinal obstruction. Later an excision of a carcinomatous stricture of the lower sigmoid, with end-to-end anastomosis had been performed.

LINCOLN DAVIS, *Secretary.*

Book Reviews.

The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago, April, June and August, 1916. Edited by P. G. SKILLERN, JR., M.D., of Philadelphia. Philadelphia and London: W. B. Saunders Company. 1916.

The April number of the Clinics of John B. Murphy is the first which is edited by Dr. P. G. Skillern, Jr., of Philadelphia; it cannot be examined without awakening thoughts of the dead surgeon.

Dr. John B. Murphy was undoubtedly one of the most able clinical teachers of his generation. He was moreover possessed of a mind of quite unusual perceptive power, and was a man singularly unlimited in the variety of mental attributes which lay behind his surgical work. His mind was essentially many sided. This peculiarity enabled him to jump from the Murphy button to the use of nitrogen in the thoracic

cavity; to appendicitis; to the reconstruction of joints; to bone surgery, etc., bringing to each a viewpoint which was characterized by the marks of something closely approaching genius. This brilliancy of his mind was greater than his ability as an operator, and much beyond the results of his laboratory work.

John B. Murphy had the characteristics which it has been the custom in this country to attribute to the Middle West; very great energy, ceaseless activity, and a perfectly innocent inability to hide his light under a bushel. He was a powerfully stimulating personality, and his too early death is a very real loss to surgery, both in and outside of America. It is a little difficult to conceive of the continuance of the "Clinics of John B. Murphy" after he has gone.

The April number includes, among many other chapters, an extremely interesting talk on the surgery of tendons and tendon-sheaths; a series of cases of bone surgery of all parts of the body; tendon transference in infantile paralysis; perforating ulcer of heel, etc., It is essentially a number devoted to the surgery of bones and tendons and, as such, is particularly appropriate at this time.

The June number, also edited by Dr. Skillern, includes a brief talk by Dr. R. C. Coffey of Portland, Oregon, on certain abdominal operations; besides this, a series of chapters upon surgery of the abdominal cavity for conditions both malignant and infectious, and certain other chapters on the female pelvis and the bladder. As usual, the pictures are numerous and excellent; some of the colored plates being particularly good in the moderation of the colors used. There is, as yet, no obvious change in the essential character of the book.

The August number is a little larger than the two previous numbers, consisting of 120 pages, and not less than 30 chapters, many of them with sub-headings. There are again a large number of chapters upon bone surgery; two upon biliary surgery; an occasional plastic; two or three chapters on surgery of the nerves, and two interesting cases of bone infections metastatic from furuncles; including a series of 16 illustrations showing certain phases of gall-bladder surgery (modified from Kehr).

The Clinics continue to show the numerous characteristics of Dr. Murphy's style.

A Layman's Handbook of Medicine. With Special Reference to Social Workers. By RICHARD C. CABOT, M.D. Boston and New York: Houghton Mifflin Company. 1916.

As would be expected, this volume of popularized medical information is replete with the personality and temperament of the author. As might also be expected, those parts of it which deal with medicine are more sound, accurate and

illuminating than those which deal with surgery. Indeed accuracy and error are mingled in it much as they are in most human productions. Some of the author's statements would hardly go unchallenged,—for instance, that no one knows the use of the prostate gland, that repair of the torn cervix is always a minor matter, never essential to life, that floating kidney is a perfectly harmless peculiarity. Dr. Cabot is to be highly commended for his sensible statements about the venereal diseases, about tobacco and alcohol, and on personal hygiene, especially with reference to bathing and clothing. It is a pity that he did not add paragraphs on corsets and shoes for women. He is to be praised also for his conservative attitude on the surgical treatment of uterine fibroids, and particularly for his clear, firm and sane stand on the subject of so-called birth control. Perhaps the most serious blemish on his book, however, is his comments on the use of the pessary in the treatment of retroversion. This is associated with his questionable statement that there is no one right position of the uterus. It is doubtless true that retroversion may exist without symptoms, but it is equally true that it more often does produce symptoms which can be relieved only, and which are promptly relieved, by correcting its position. In this correction the pessary is a now unfashionable, but in expert hands, an exceedingly valuable and harmless agent. Doubtless it is an appliance that, like all good things, has been abused. Probably Dr. Cabot's attitude towards it is dependent on the fact that he has not often seen it used intelligently. Similarly, with regard to prolapsed kidney, Dr. Cabot is right in condemning the former surgical fad of nephropexy, but wrong in failing to recognize that when floating kidney produces symptoms, which it frequently does, it should be and can be corrected by correction of the ptosis, of which it is one manifestation. Indeed so important a condition as ptosis is not mentioned in the index. In his paragraphs portraying the gloomy hopelessness of cancer of the uterus, Dr. Cabot apparently fails to recognize that in the great majority of cases this fatal disease is preventable by timely treatment and repair of the lacerated cervix from which it arises, a repair which, as we have noted, he states is never essential to life. This is another instance of the difficulty with which simple and recognized facts of preventive medicine make headway in general knowledge.

Despite certain defects, however, Dr. Cabot's book is stimulative and, on the whole, sound. Certainly the possible harm of its few inaccurate or questionable statements will be far less than the good done by its substance, which in the hands of the laity, for whom it is intended, cannot but be in the main beneficial. Most of all, it is to be commended for the wholesome frankness and optimism of tone which pervades it, and which is, perhaps, the element most needed to divest the facts of medicine from

the mystic terror which often shrouds them in the mind of the public.

Constipation, Obstipation and Intestinal Stasis (Auto-intoxication). BY SAMUEL GOODWIN GANT, M.D. Second Edition. Philadelphia and London: W. B. Saunders Company. 1916.

The first edition of this book under the title of "Constipation and Intestinal Obstruction (Obstipation)" was reviewed in our issue of March 11, 1909, page 316. The title of the second edition has been somewhat changed in order to meet not only the advances in medical and surgical work, but also a generally accepted change in nomenclature. It is a considerable relief, however, to find that Dr. Gant has not changed his opinions with the nomenclature. He takes a very sane and conservative view in regard to the interpretation of the Roentgenological findings and also in regard to the therapy based upon those findings. While admitting that surgical procedures are often desirable in chronic intestinal disturbances, he is firmly opposed to the tendency evidenced in many places of subjecting patients on comparatively slight provocation to major surgical operations.

Geriatrics, the Diseases of Old Age and Their Treatment. BY L. L. NASCHER, M.D. Philadelphia: P. Blakiston's Son and Company. 1916.

Every year brings a large list of publications of all sorts on the subject of diseases of early life. Nevertheless, to many practitioners the diseases of old age are perhaps of equal importance. The appearance of Dr. Nascher's book, which was essentially the first in the English language on this subject, apparently filled a considerable need, since we now have a second edition which has grown to a bulky volume of over 500 pages. The book covers fully all the conditions peculiar to advancing age.

Preventive Medicine and Hygiene. By MILTON J. ROSENAU, Professor of Preventive Medicine and Hygiene, Harvard University; Director of the School for Health Officers of Harvard University, and the Massachusetts Institute of Technology; formerly Director of the Hygienic Laboratory of the United States Public Health Service. Second edition, thoroughly revised, with 172 illustrations and 1286 pages. New York and London: D. Appleton and Company, 1916.

The first edition of Dr. Rosenau's text-book was reviewed at considerable length in the issue

of the JOURNAL for September 11, 1913 (Vol. clxix, page 397). This second edition, appearing after so short an interval, is evidence of the great demand which the first has deservedly met. The rapid increase of knowledge during these three years has necessitated the addition of many new subjects, including discussion of the prevalence of venereal diseases, the Shick reaction, the use of emetine, the standardization of bacterial vaccines, sensitized vaccines, the Wassermann test, cancer heredity, carbon dioxide in alveolar air, reinspiration of expired air, air washing with reference to ventilation, and the sanitation of swimming pools. The chapters on leprosy, mushroom poisoning, beri-beri, pellagra, carbon monoxide, chlorinated lime, vital statistics, disinfection, and quinine prophylaxis for malaria have been rewritten in whole or in part. The chapter on prevention of mental diseases has been expanded, and its title changed to Mental Hygiene. There has been added at the close of the work an entirely new section on military hygiene, which is of especial interest in the light of the recently awakened public concern in military preparation. The chapters on sewage and garbage are contributed by Professor George C. Whipple of Harvard and that on Vital Statistics by Assistant Surgeon-General John W. Trask of the United States Public Health Service. The author of the chapter on Mental Hygiene is Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene.

The merits of Dr. Rosenau's admirable textbook require no repetition to the medical profession. Particular commendation is due to his effective and lucid style, and to his practice of citing references at the close of each section. The volume should continue to be one of constant use and value, not only to students, but to practitioners, all of whom should take interest in the practical application of the methods of preventive medicine.

A Manual of Therapeutic Exercise and Massage.

By C. HERMANN BUCHOLZ, M.D., Orthopedic Surgeon to Out-Patients, and Director of the Medico-Mechanical and Hydro-Therapeutic Departments of the Massachusetts General Hospital; Assistant in Orthopedic Surgery, Harvard Medical School; Assistant in Therapeutics, Harvard Graduate School. Illustrated with 89 engravings. Philadelphia and New York: Lea and Febiger, 1917.

Until the appearance of this admirable manual, designed for the use of students, physicians and masseurs, there was in English no satisfactory practical text-book on the therapeutic use of exercise and massage. Larger works, like those of Dr. Douglas Graham, were too bulky for effective clinical use by practitioners. Dr. Bucholz has produced a book which is a contribution of genuine value to the literature of his subject

and which deals not merely with technic, but with the indications for the therapeutic employment of the methods described. It is divided into two parts, the first dealing in ten chapters with the history of therapeutic exercise and massage, the technic of active and passive exercise, free exercises, apparatus, sports and games, the physiology of exercise, the use of exercise, application and physiology of massage, and the relation of exercise and massage to each other, and to other physical therapeutic methods. The second part deals in sixteen chapters with the application of exercise and massage to special conditions, such as stiffness of the joints, fractures, arthritis, subacromial bursitis, lumbo-sacral and sacro-iliac affections, faulty posture, lateral curvature, affections of the foot, flaccid and spastic paralysis and ataxia, neuralgia, neuroses, affections of the circulatory, respiratory and abdominal organs, and constitutional diseases. The author has wisely omitted the subjects of massage of the eye, the ear, and the female pelvic viscera, while those of the nose and throat, and those connected with mental disorders, have been but briefly mentioned. As he points out in his preface, the accurate diagnosis of these diseases requires such a degree of specialized skill that they should not be treated by the masseur or the general practitioner, for whom this book is intended. The illustrations are well selected and reproduced and there is an excellent index. The author is to be congratulated upon the production of a scholarly work in such form as to make it of available and serviceable value to the general profession.

Operative Midwifery. By J. M. MUNRO KERR, M.D., C.M. Third Edition, 308 Illustrations, 725 Pages. New York: William Wood & Company. 1916.

The third edition of Professor Kerr's work makes its appearance with no essential changes in its makeup. The foreign technique, which in some details is so very different from ours, is well explained and pictured. The popularity of the book is shown by its repeated editions. It surely is one of the best guides to operative obstetrics that we have.

Blood Pressure. By FRANCIS ASHLEY FAUGHT. Second Edition. Philadelphia and London: W. B. Saunders Company. 1916.

The first edition of Faught's book was reviewed in our issue of August 7, 1913, p. 207.

The second edition follows similar lines and introduces the tremendous wealth of material that has accumulated during the past three years. One finds in this work an excellent résumé of the significance of blood pressure in all sorts of conditions. It is essentially a purely clinical work.

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PROPOSED AMENDMENTS TO NURSES' REGISTRATION LAW.

AMONG the important legislative measures which will come under consideration of this session of the Massachusetts General Court is a series of proposed amendments to the present law governing the registration of nurses and the inspection of hospital training schools in this Commonwealth. The legislation embodying these amendments is recommended by the Massachusetts State Nurses' Association, and endorsed by a majority of the State Board of Registration of Nurses.

The present law, which established the existing board of five members, consists of thirteen sections. No amendments are proposed to Sections 1, 2, 4, 8, 9, 11, 12 and 13. The principal amendments proposed in the remaining sections are as follows: Section 3 at present reads:

"It shall be the duty of said board, immediately upon its organization, to notify all per-

sons engaged in the practice of nursing the sick, in this Commonwealth, of times, places and subjects of the examinations for registration, by publication in one or more newspapers in each county. Application for registration shall be made upon blanks to be furnished by the board, and shall be signed and sworn to by the applicants. An applicant for registration who shall furnish satisfactory proof that he or she is at least twenty-one years of age and of good moral character shall, upon payment of a fee of five dollars, be examined by the said board, and, if found to be qualified, shall be registered, with a right to use the title 'registered nurse' and shall receive a certificate thereof from the board, signed by the chairman and secretary. An applicant who fails to pass an examination satisfactory to the board, and is therefore refused registration, shall be entitled, within one year after such refusal, to a reexamination at a meeting of the board called for the examination of applicants, without the payment of an additional fee. The said board may, after a hearing, by vote of a majority of its members, annul the registration and cancel the certificate of any nurse, and, without a hearing, may annul the registration and cancel the certificate of a nurse who has been found guilty of a crime or misdemeanor. All fees received by the board shall once a month be paid by its secretary into the treasury of the Commonwealth."

For this section it is proposed to substitute the following:

"Application for registration shall be made upon blanks to be furnished by the board, and shall be signed and sworn to by the applicants. Applicants for registration as registered nurses, who shall furnish the board with satisfactory proof that they are twenty-one years of age or over, of good moral character, and that they have received a certificate of graduation from a training school for nurses which gives at least two years' training in a hospital, and which is considered efficient by the board, shall, upon payment of a fee of five dollars, be examined, and if found qualified, shall be registered and authorized to use the title 'registered nurse' and shall receive a certificate thereof from the board, signed by its chairman and secretary. An applicant who fails to pass an examination satisfactory to the board, and is therefore refused registration, shall be entitled, within one year after such refusal, to a reexamination at a meeting of the board called for the examination of applicants, without the payment of an additional fee. The board may revoke the certificate of any nurse issued by it, for sufficient cause, but before this is done the holder of said certificate shall have thirty days' notice, and after a full and fair hearing of the charges made, by a majority vote of the whole board, the certificate may be revoked.

The board shall have authority under this section to visit and report upon, at any time, the training schools for nurses in this Commonwealth for the purpose of determining their fitness and efficiency as shown by their general equipment, by the character, the methods, and the extent of instruction given therein.

The board is hereby authorized to appoint or employ a registered (graduate) nurse, who has been engaged at least five years in the education of nurses, to act as visitor and adviser of training schools for nurses. Such visitor shall be selected from (at least) five names presented by the Massachusetts State Nurses' Association, or may be one of the members of the board. The compensation of the visitor of training schools shall be \$5.00 for each day actually engaged in this service, with travelling and incidental expenses actually incurred in the discharge of her official duties and shall be paid from the treasury of the Commonwealth, upon the approval of the board.

No action shall be taken, however, militating against any school for nurses until after thorough investigation by the board, in conference with the directors of the schools in question, and an allowance made by the board for one year in which to meet the required standard."

Section 5 of the present law reads: "Any resident of this Commonwealth who shall make application for registration within one year after the passage of this act, and who shall prove to the satisfaction of the board, by affidavit or otherwise, that he or she was actually engaged for five years next prior to the date of application in nursing the sick in a competent manner, or has had such experience in a hospital or training school as in the opinion of the board would justify registration, shall be registered without examination on payment of a fee of \$5.00."

The following is the proposed amendment for this section:

"Applicants for registration, under this act, who cannot qualify as graduates of training schools for nurses, and who shall furnish the board with satisfactory proof that they are twenty-one years of age or over, and of good moral character, and who are endorsed by three citizens of this Commonwealth, known to be responsible persons of good moral character, one of whom shall be a physician registered in this Commonwealth, shall, upon payment of a fee of three dollars, be registered with the right to use the title 'registered attendant,' and shall receive a certificate in testimony thereof from said board, signed by its chairman and secretary.

Nothing in this act shall be construed as preventing a person registered under the title 'registered attendant' from filing a new application

with the required fee of five dollars for the purpose of securing the title 'registered nurse,' if he or she shall have received a diploma from a training school for nurses as heretofore provided in this section."

The amendments to Sections 6 and 7 are concerned with matters of detail, chiefly of fees and compensation. The proposed amendment to Section 10 makes registration compulsory after January 1, 1920.

It is evident that the essentials of the proposed amendments are that the board may have the authority to send an inspector to visit the schools from which nurses go up for examination, and that after 1919, registration shall be compulsory for those who wish to practice as trained, graduate or registered nurses. This latter provision is deemed desirable by the proponents of the amendment to preclude the possibility that nurses discharged from hospitals for a cause may continue to obtain outside employment, passing themselves off as graduates of the schools from which they have been expelled.*

INDUSTRIAL HEALTH INSURANCE.

THE discussion of the problems associated with the question of industrial health insurance continues to absorb a large share of the attention and interest of the medical profession. In Massachusetts the Young bill is under consideration in legislative committee. In New York, the Mills bill is receiving similar consideration. In a recent issue of the Weekly Bulletin of the New York Health Department, this bill was commented upon editorially in part as follows:

"The bill provides that each fund shall appoint one or more medical officers, whose function it shall be to decide whether or not a patient is eligible for cash benefit, and thus to relieve the attending practitioner of this conflicting duty, which the German physician is called upon to perform. Dr. Frankel proposes that a local organization be created for providing medical care, and that any insurance carrier be permitted to furnish the money benefits. Such a separation would be a repetition of the unfortunate British precedent, where many of the medical problems arise because of the lack of contact between the doctor and the carrier of the cash benefit.

"The Mills bill, it should be borne in mind, provides for the creation of local and trade funds jointly managed by employers and em-

* Since this editorial was in press, we have received from Dr. Cook a communication on this subject, which is published in a later column and to which attention is directed.—EDITOR.

ployees, and supervised by a state health insurance commission. Establishment funds, trade unions and fraternal, providing equal benefits and maintaining specified standards, may be approved by the commission. These carriers, among which commercial companies are not included, furnish the money and the medical benefits. The advisory medical bodies, both state and local, provide an opportunity for consultation with the medical profession upon all points of interest to physicians. It is these which the council of the Medical Society of the State of New York has endorsed as safeguarding 'the public interest, the public health, and the welfare of the medical profession.'"

Attention has been called to the fact that in none of these schemes for compulsory industrial health insurance is provision made for the optional insurance of persons receiving more than the standard minimum annual wage. The possible desirability of including such provision in any piece of final legislation on this subject should be seriously considered. It seems likely that many persons receiving salaries or incomes of \$1200 to \$1500 a year, and whose legitimate expenses under the present conditions of high cost of living consume nearly the whole of this amount, without provision for medical attendance in case of sickness, might justifiably wish and properly be allowed to share in the benefits of a scheme of health insurance, if they so desire. It is difficult always to draw the line equitably in any economic classification; but if it is drawn in the matter of medical benefit and health insurance, it seems that it might well at the same time represent a distinction between compulsory and voluntary participation on the part of beneficiaries.

ARMY MEDICAL CORPS EXAMINATIONS.

THE Surgeon-General of the Army announces that preliminary examinations for appointments of First Lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured upon application to the "Surgeon-General, U. S. Army, Washington, D. C."

The essential requirements to secure an invitation are that the applicant shall be a citizen of the United States, shall be between 22 and 32 years of age at the time of commission at the close of the Army Medical School, a graduate of a medical school legally authorized to confer

the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as interne after graduation. Graduate physicians who are serving their internship and who meet the other requirements can be examined for appointment with the understanding that they will complete the required postgraduate hospital internship before coming to the Army Medical School. Those who qualify at their preliminary examination and complete their hospital internship by July first will be ordered to the Army Medical School for the special session of the school commencing July 9. The regular session of the school will open on October 1st.

In order to perfect all arrangements for the examination, applications should be completed at the earliest practicable date. There are at present 230 vacancies in the Army Medical Corps. After July first, there will be 22 additional vacancies.

MEDICAL NOTES.

AMERICAN ASSOCIATION OF MEDICAL COLLEGES.—The annual convention of the American Association of Medical Colleges was held at Chicago on February 6 and Dr. W. S. Carter of Galveston, Texas, was elected president for the ensuing year. A resolution was adopted advocating the increase of requirements for admission to medical schools throughout the United States to the standard already set by the larger universities.

GIFT TO UNIVERSITY OF ILLINOIS.—Report from Urbana, Ill., on February 12, states that Congressman William McKinley has given to the University of Illinois, the sum of \$120,000 for the establishment of an infirmary to be the basis of an extensive health service for the students and teaching staff.

EUROPEAN WAR NOTE.

WAR RELIEF FUNDS.—On February 24 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$281,431.71
French Wounded Fund	198,325.00
Armenian Fund	154,778.68
Serbian Fund	114,672.86
Permanent Blind Fund	100,803.70
Surgical Dressings Fund	74,740.47
Polish Fund	61,413.77
Italian Fund	33,600.44
LaFayette Fund	21,730.03
Russian Refugees' Fund	17,354.98
French 'Pithisid' Fund	13,208.44
French Blind Fund	3,222.00
Allied Tobacco Fund	2,548.50
French Comfort Fund	1,532.00

BOSTON AND NEW ENGLAND.

ST. ELIZABETH'S HOSPITAL.—It is announced that the new home for nurses at St. Elizabeth's Hospital, Brighton, is nearly completed and is to be dedicated on April 1, after which it will be ready for immediate occupancy.

"The building is of five stories, and the exterior is of brick, with stucco finish, and harmonizes in every way with the architectural splendor of the other buildings. Over the main entrance is a carved stone bearing the coat-of-arms of the cardinal.

"The interior is finished with North Carolina pine, and the floors are constructed of concrete, topped with hardwood. The staircases are of iron, and open on to a roof garden.

"The roof garden is laid in tile and measures 110 feet by 42 feet, with a 3 1-2 foot parapet surrounding it on all sides. Here the nurses will be able to enjoy the cool evenings after their labors during the sultry days of the summer.

"On the first floor are accommodations for 25 maids, besides lounging and sleeping quarters, living rooms, kitchenette, and a small hand laundry for the nurses. On the second floor is the lecture room, demonstration room, parlors, small reception rooms, library, infirmary, and the suite of the superintendent of the training school. The third, fourth and fifth floors are reserved for the sleeping quarters of the nurses, with 20 rooms on each floor for this purpose, thus making accommodations for at least 60 nurses. On these floors is a suite for the nun in charge.

DEDICATION OF BETH ISRAEL HOSPITAL.—The new building of the Beth Israel Hospital, Roxbury, was formally opened on February 4, and received its first patient the same day. The staff of the Hospital consists of Dr. L. R. G. Crandon and Dr. David D. Scannell as visiting surgeons-in-chief. The assistant visiting surgeons are Dr. I. J. Walker, Dr. Herbert F. Day, Dr. Albert A. Shapiro and Dr. M. E. Barron. The visiting physicians-in-chief include Dr. Harry W. Goodall and Dr. Kalman M. Davidson. Other members of the staff are Dr. Philip Castleman, Dr. S. A. Rollins, Dr. Louis Arkin, Dr. William Liebman, Dr. Solomon and Dr. Joseph Shohan. The assisting visiting physicians are Dr. J. Holzman, Dr. Max Sturnick, Dr. Solomon Myers, Dr. Myron L. King, Dr. Sidney M. Saltz, Dr. A. J. Hurwitz, Dr. Henry Norman and Dr. S. M. Pearl.

CARE OF INFANTILE PARALYSIS VICTIMS.—The Instructive District Nursing Association of Boston is doing much service in the way of the care and treatment of the victims of the recent poliomyelitis epidemic. They have in their charge one hundred and fifty children who are given systematic exercises in order that they may be helped to overcome so far as possible their disabilities. Provision has been made in the

clinics of the public hospitals for ninety patients and the worst cases are carried to the hospitals in ambulances. The Instructive District Nursing Association carries on this branch of its work in conjunction with the Harvard Infantile Paralysis Commission.

RED CROSS CLASSES IN FIRST AID.—The Boston Metropolitan Chapter of the Red Cross is offering this winter a series of courses in first aid and in preparation for volunteer service in sanitary corps in the event of war. A course of ten lessons is offered to men and it is planned to form a detachment, in case the country should be involved in war, in which it is hoped that members of this class will enlist individually for service.

The following courses are offered to women:

1.—For women who wish to fit themselves to be of real assistance to nurses in case of war, or to be useful in illness in their own homes. A course in home nursing, 15 lessons given by a Red Cross nurse.

2.—A course in first aid of 10 lessons, conducted by surgeons, for practical usefulness in case of emergency.

3.—A course in advanced first aid, 10 lessons, technical practice only. This is open to graduates of course 2. Six months after graduation.

4.—A course in surgical dressings. Eight lessons given by a Red Cross nurse. This teaches the making of the dressings used by the U. S. army and navy surgeon.

5.—A course in dietetics, 15 lessons will be offered at an early date.

Full information concerning these courses can be obtained at 83 Newbury Street.

WEEK'S DEATH RATE IN BOSTON.—During the week ending February 17, the number of deaths reported was 287 against 255 for the same period last year, with a rate of 19.37 against 17.21 last year. There were 45 deaths under one year of age against 30 last year; and 117 deaths over 60 years of age against 93 last year.

The number of cases of principal reportable diseases were: diphtheria, 73; scarlet fever, 23; measles, 136; whooping cough, 2; typhoid fever, 2; tuberculosis, 43.

Included in the above were the following cases of non-residents: diphtheria, 26; scarlet fever, 4; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 5; scarlet fever, 1; measles, 1; tuberculosis, 27.

Included in the above were the following deaths: diphtheria, 3; scarlet fever, 1; tuberculosis, 4.

THE LAWRENCE GENERAL HOSPITAL.—The forty-first annual report of the Lawrence General Hospital for the year ended August 31, 1916, records a large increase in the amount of work done by the Hospital. The number of pa-

tients admitted during the year was 2303, 530 more than the previous year. The number of patients admitted to the out-patient department was 2198, 627 more than the previous year. The maternity ward which last year nearly doubled its work, has somewhat increased during the present year. Through a gift, a sun parlor has been added to this ward.

HOSPITAL BEQUEST.—Through the will of the late Alice Forbes Cary of Milton, the Milton Convalescent Home was bequeathed \$20,000.

Obituary.

ALBERT GEORGE BLODGETT, M.D.

DR. ALBERT GEORGE BLODGETT died at his home, Ware, Massachusetts, February 10, 1917, of arteriosclerosis, after a lingering illness. He was born in Monson, September 2, 1841, the son of Alden A. and Elvira Cady Blodgett. Dr. Blodgett was educated at the Ware high school and at the State Normal School at Westfield. Completing his course in February, 1864, he entered the Berkshire Medical Institution at Pittsfield and from there went to the Bellevue Hospital Medical College in New York City, receiving his M.D. in 1868 from that school. The same year he began practice in West Brookfield and remained there until 1895, when he removed to Ware. Dr. Blodgett took an active interest in the welfare of the town, becoming secretary of the Ware Board of Health, a position he held for six years, and secretary of the Republican Town Committee. While in West Brookfield he joined the Massachusetts Medical Society and was a councilor many terms from the Worcester District. In 1902 he was vice-president, and in 1904, president, of the Hampshire District Medical Society, and in 1906, a councilor from that district society. He became a retired Fellow in 1911. Dr. Blodgett held membership in the American Medical Association, was a founder of the Brookfield Medical Club in 1882, and was a Mason. He is survived by his widow and one daughter.

Correspondence.

THE ANSWER TO THE MEDICAL PROBLEM IN "HEALTH INSURANCE."

Mr. Editor:

The answer to the problem which has vexed us too long is very simple. The problem is to be answered by abolishing the problem, by cutting out entirely the proposal to furnish medical care as part of the insurance benefits.

The move purports to be one for insurance of the workman; not for the regulation or ruination of medical practice in this Commonwealth. Let it be an insurance measure pure and simple.

The proposal to let John Doe, sick and off the job, have half, two-thirds, or three-quarters of his wages, while he is out, sounds well; is probably wise, and is

very likely entirely feasible. But that is no reason why Richard Roe, M.D., should be forcibly legislated out of his habits and routine, out of his dignity, as he conceives it, and very likely out of half of his living as well; more particularly as he has not asked for any change or merited any regulation, so far as we know. And that is what it comes to.

The medical profession in Massachusetts, since they woke up to the threatening presence of this problem, are divided into two classes, and two only,—those who are savagely against the whole project, and those who feel that the principle may be all right, but that the effect of the proposed legislation is likely to be very disastrous to our profession and to our work. *Not one practitioner*, not one consultant even, who is so situated as to be conversant with the conditions of average medical practice, has raised his voice in favor of sickness insurance (perhaps misnamed "health insurance") as exemplified in the Young bill, now before the legislature of this State.

For something over a year, various committees (Lambert of New York, the late Dr. Favill of Chicago—lately replaced by Billings of Chicago and Cotton of Boston—these for the American Medical Association; Cotton of Boston, Anthony of Haverhill and Merrill of Lawrence, for the Massachusetts Medical Society; and lately Lambert, acting for the "double A Double L"—the American Association for Labor Legislation) have tried to work out a scheme under which the rights, and, more important, the opportunities for good work, in our profession could be safeguarded with any reasonable certainty, under the scheme proposed by the A. A. L. L.

It is doubtful if any man of those concerned in these efforts is without misgivings as to this safeguarding, not only of our interests, but of our aspirations for real service. These committees have done real work, and done it honestly and earnestly; their reports leave no doubt of that. Such work is not likely to go further. And the proponents of the measures now under discussion have been generous in including in their drafted bills, the changes suggested by the national committee and the committee in our own State.

But there is a certainty that no bill will go through any legislature unmarred. Even unutilized, the provisions of the bills presented here and in New York barely protect the continued existence of real medical practice. At best, the medical attendant on the "Panel" would be subject to supervision by somebody, maybe by anybody; his choice of consultant, operator or hospital would be hampered; he would conduct business through a "local"; not with his patient; his judgment as to proper convalescence would be criticized by someone—a referee, probably a recent graduate of some hospital. He would often have to earn his fee twice; once by work and a second time by humiliating explanation and argument.

Most of the best men would try to keep out of this work, as they try now in Massachusetts to side-step cases under the accident law,—a distinct loss in itself. But this is not all. The rate of compensation would be cheapened, though it is already low enough. After less than five years of our accident law in this State, we can see what happens.

The Accident Board rightly enough says that \$50.00 for a major surgical operation is *not excessive*. What happens next? Fifty dollars becomes the price, not only for those really coming in under the law, but for their heirs and assigns and acquaintances; \$50 becomes, not the minimum, but the maximum price. This has already happened.

Now, if under the new law proposed, if it should pass, we were compelled to take care of the persons and families of those earning less than \$1200 a year, for less than half the current rates,—make no mistake, it will be less than half, not more,—what do you think the man earning \$1500 will pay, and what will be the effect on our fees from even the five- or the ten-thousand class?

This proposed act, with all the safeguards we can

devise, means reorganization and perhaps ruination of private practice in Massachusetts. Not one doctor, so far, has asked to come in. Why do we not ask to be left out? Why not ask for an amendment to cut out the medical care benefit? Why follow the precedent of the German law? We are not Germans. Why not leave the insurance scheme, as such, to fight its own battle on its own merits, while we demand from the legislature a chance to be free of the theoretical demands of professional economists; a chance to do the best we can with our own problems—grave enough at best; a chance to do our work undisturbed? We ask nothing, where we might ask much. We represent a progressive element in the body politic. We ask only that our progress be not disturbed by schemes for progress along other economic lines in regard to which we do not pose as experts; in regard to which our professional work leaves us hardly time to form an opinion.

The Massachusetts Medical Society, through its Council, has expressed itself as *not opposed to the principle of health insurance*. But the Society has asked that no precipitate legislation be enacted to prevent the profession from trying to do its best work untrammelled; has asked for time to consider.

There seems to me, after much consideration, no way that this work—the medical work—may be done decently and without interference, unless we can divorce the purely economic question as to the payment of wages during illness from the proper professional care of the sick. This would leave medical matters as they are; would let the sick workman arrange for his own care by doctor or hospital, and pay his own bills, as he does now, only that he would have the benefit of his insurance payments; would put him just where any citizen is (you or I), who carries sickness insurance with a company.

Dr. Anthony: "Let us use the stress of our endeavor to strengthen preventive medicine; to utilize existing laws and to work for others; that may free the honest, sober, industrious workmen from the burden of those who abuse alcohol and drugs; exercise no self-control of bodily functions; are violators of the obligation to their families; also from those who are born feeble-minded; to assist him to obtain a living wage, either directly or through the utilization of sick benefit. Then we can extend to him, in the rare case that force of circumstance may make him dependent, the traditional charity of our profession; in other words, let us help to attack the cause of the present evil conditions and have our work basic in its nature."

FREDERIC J. COTTON, M.D.

PROPOSED AMENDMENTS TO NURSES' REGISTRATION LAW.

Natick, Mass., February 23, 1917.

Mr. Editor:

I WOULD like to call attention to some points in House bill No. 590, relative to the registration of nurses.

I note, with interest, the advances made, in some respects, over bills introduced in former years, especially as relates to training schools. Heretofore authority has been asked:—

"to investigate at any time the training schools for nurses in this Commonwealth, for the purpose of determining their fitness and efficiency, as shown by their general equipment, by the character, the methods, and the extent of instruction given.

"For the purpose of conducting this investigation the board may employ a person legally entitled to R. N. This selection shall be made from names presented by the Massachusetts State Nurses' Association."

The present bill provides that the board may "appoint or employ a registered (graduate) nurse who

has been engaged at least five years in the education of nurses. Such visitor shall be selected from (at least) five names presented by the Massachusetts State Nurses' Association, or may be one of the members of the board."

This is practically the recommendation made in the editorial in the March, 1916, number of the *Modern Hospital*, in which, discussing the "Proposed Massachusetts Inspection Law," it says:

"It occurs to us that the whole matter could be most intelligently settled if all parties could agree that the woman employed as inspector on this work must have had at least five years' executive experience at the head of an approved hospital."

Thus the danger or possibility in former bills of permitting a recent graduate, just out of a training school, with only theory to guide her, to act as an inspector, is safeguarded. It is interesting to note that the words "visitor and advisor" are substituted for "inspector"—a most commendable change.

Then, too, the proviso that:

"No action shall be taken, however, militating against any school for nurses until after thorough investigation by the board, in conference with the directors of the school in question and an allowance made by the board for one year in which to meet the required standard," is the first time, so far as I can recall (and I have on file copies of all, or nearly all, bills introduced in past years, beginning in 1905) that the rights of training schools to fair dealing have been recognized in attempted legislation and safeguarded by proposed laws.

The provision that the "visitor shall be selected from (at least) five names presented by the Massachusetts State Nurses' Association, etc.," savors altogether too much of class legislation, and appears to be an attempt to keep matters closely in the hands of said Association. Under such a provision no other organization, and no other person, can legally suggest any names to the board, but must present them to the Association, and let that body pass upon them, and if it approve, it will send in the name or names. Statistics that I gathered one year ago (and there cannot have been any material change since then) showed the membership of the Association to be about seven hundred out of several thousand graduate nurses resident in the Commonwealth. Can it be said to be representative of all the graduate nurses of Massachusetts? Does Massachusetts wish to bar out all these, and allow them no voice? Does Massachusetts wish to ignore all other citizens? Does she propose to say to the Board of Registration of Nurses, "I do not think that you are competent or safe to be left to an unrestricted choice, but you must be tied to names selected by a body not representative of the nursing profession"? A provision far from the spirit of democracy, fair play and equality before the law.

Data furnished me several years ago seem to show that the state of Illinois (I have not the facts regarding Massachusetts) has expressly guarded against such legislation by saying:

"The General Assembly shall not pass local laws . . . granting to any corporation, association, or individual any special or exclusive privilege, immunity or franchise."

Under that provision the Illinois Attorney General held that: "A statute providing for the appointment by the Governor of a Board of Chiropractic from those nominated by the Chiropractists gives such a special or exclusive privilege."

Laws may provide that organizations may suggest candidates for appointment, but that is different from saying that the appointing power shall be confined to that list.

Quite likely it is my fault, but I am unable to understand clearly Sections 10 and 11 of the proposed amended law.

Section 10 says that:—

"Whoever, after January first in the year nineteen hundred and twenty, not being lawfully authorized

to practice as a registered nurse within this Commonwealth, practices or attempts to practice as a graduate or trained nurse, etc. (italics mine). . . shall be fined, etc."

Section 11 says:

"This act shall not apply to . . . the acts of any person nursing the sick for hire who does not assume to be a registered nurse."

What I am unable to understand is whether or not it is intended to use the words "registered" and "graduate or trained" as meaning the same.

They certainly do not mean the same in every-day life. There are many "graduate or trained" nurses who are not registered and never will be. Are they to be understood to be law breakers if they attempt to nurse after Jan. 1, 1920? Section 10 would seem to make them so. Section 11 says they are not breaking the law by nursing for hire.

Under Section 10 could a graduate nurse hold a position of responsibility unless registered? I have in mind a concrete instance. A graduate nurse from one of our small training schools, who is not, and probably never will be, registered, but who possesses especially good qualifications as a nurse, giving good satisfaction to patients and physicians of all classes, has held for a year or more the position of superintendent of nurses and patients in a sanitarium of more than state reputation—a pioneer in its special line of work. Does Section 10 mean that this person could not continue to hold that position after Jan. 1, 1920, unless registered? Does it mean that nurses who have been giving great satisfaction to physicians of high rank, sought after oftentimes in preference to those of greater renown, must give up nursing unless registered? This is only one of many instances. Such results of legislation have followed in some other states.

I have elsewhere spoken of having many bills on file. I have also letters in abundance from parties in New York, Pennsylvania, Illinois, Michigan and other states, together with any amount of printed matter (sufficient to make up a large part of one issue of your JOURNAL) bearing on this many-sided question of nurse registration. I could give many apt quotations. Suffice it to say that the changes and advances in the bills from 1905 to the present time are quite marked and interesting as denoting progress in the views held and advocated. Meanwhile Massachusetts needs to be careful as to any new legislation.

Very respectfully,

CHARLES H. COOK, M.D.

A CASE OF CYCLOCEPHALUS.

Boston, Feb. 15, 1917.

Mr. Editor:

I am enclosing a picture of a case of Cyclocephalus, thinking that it might be sufficiently interesting to merit publication.



The "monster" was delivered at the seventh month, being the result of the third pregnancy of an Italian

woman twenty-two years of age. The first two children are living and well.

Above the eye of the "monster" was attached a rudimentary nose composed entirely of cutaneous tissue (Ethmocephalia) which could be easily moved in any direction.

The monster weighed three and a half pounds.

Yours very truly,

GAETANO PRAINO, M.D.

RECENT DEATHS.

J. EDWARD HOOLE, M.D., of Somerville, Mass., died suddenly at his home on February 15. Dr. Hoole was born in Lowell in 1869, and was graduated from the College of Physicians and Surgeons at Baltimore, in 1903. Since that time he had practiced his profession in Somerville. He is survived by his widow and one daughter.

EDWARD W. AVERY, M.D., of Brooklyn, N. Y., died in that city on February 13. Dr. Avery was born in 1841, the son of Prof. Charles Avery of Hamilton College. After graduating from Hamilton College he attended the New York Homeopathic Medical College and the College of Physicians and Surgeons, graduating from the latter institution in 1866. During the Civil War he became an assistant surgeon in the United States Navy and later a surgeon in the Army. He enlisted as a surgeon in the German army during the Franco-Prussian War, and was with the troops when they entered Paris. Dr. Avery was the founder of the old Central Homeopathic Dispensary. He was a member of the Kings County Medical Society and of the New York State Homeopathic Society, and senior member of the Kings County Homeopathic Society.

WILLIAM W. BURNETT, M. D., of Wrentham, Mass., died on February 18 of heart disease while returning from a night call in an adjoining town. Dr. Burnett was born in New York City Nov. 9, 1848. He graduated from the New York Homeopathic Medical College in 1870, practiced medicine in that city, in Freehold, N.Y., in Washington, D. C., and in Amherst, Mass. He had been located in Wrentham for about twenty years. He was a member of the Washington Medical Society and the American Institute of Homeopathy. A widow and two children survive him.

ROBERT ALEXANDER DOUGLAS-LITHGOW, M.D., a retired Fellow of the Massachusetts Medical Society, died at Boston, February 16, aged 70 years. He was a graduate of the University of St. Andrews, Dundee, Scotland, 1890, and of the University of Edinburgh, 1871, and had practised in Boston since 1900.

GEORGE BAKER UNDERWOOD, M.D., a Fellow of the Massachusetts Medical Society, died at his home in Gardner, February 2, aged 62 years. He was a graduate of the Dartmouth Medical School in 1882, and joined the Society, from West Gardner, in 1884.

ALBERT CLARENCE LANE, M.D., a retired Fellow of the Massachusetts Medical Society, living in Woburn, died at the Massachusetts General Hospital, Boston, February 1, aged 65 years, following an operation for appendicitis. He was a graduate of the Long Island College Hospital in 1879, and was retired in June, 1916.

SIR FREDRICK WILLIAM BORDEN, M.D., who died on January 6 at Canning, N.S., was born at Cornwallis, N. S., in 1847. A physician by profession, he served for many years as a British army surgeon. From 1896 to 1911 he was minister of militia and defense in the Laurier cabinet, and was knighted for his efficiency in the organization of the Canadian troops who fought during the Boer War in South Africa.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

March 8, 1917

ORIGINAL ARTICLES

RESULTS OF TREATMENTS FOR FRACTURES OF CARPAL BONES. <i>By Herman W. Marshall, M.D., Boston.</i>	333
INEBRIETY AND HOW TO CONTROL IT. <i>By Irwin H. Neff, M.D., Norfolk, Mass.</i>	337
INTRATHORACIC GOITRE. <i>By Frank H. Lahey, M.D., Boston.</i>	341
SUPPURATIVE LABYRINTHITIS: A CRITICAL REVIEW OF ITS DIAGNOSIS AND TREATMENT. <i>By Arthur B. Ducl, M.D., F.A.C.S., New York.</i>	345
PARAVERTEBRAL ANESTHESIA. <i>By Frank C. W. Konrad, M.D., Boston.</i>	351

CLINICAL DEPARTMENT

A LARGE OVARIAN TUMOR. <i>By Frank A. Pemberton, M.D., Boston.</i>	354
A CASE OF ASPERMIA. <i>By Scipio W. Little, M.D., Rochester, N. Y.</i>	355
A CASE OF CONGENITAL DISLOCATION OF THE SHOULDER JOINT. <i>By Frank E. Perkhman, M.D., Providence, R. I.</i>	356
A CASE REPORT. <i>By Allen H. Blake, M.D., West Somerville, Mass.</i>	356

THERAPEUTIC AND PREVENTIVE MEDICINE

TREATMENT OF PAIN AND DISTRESS IN DIGESTIVE DISORDERS. <i>By A. Everett Austin, M.D., Boston.</i>	357
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MEMORIAL ADDRESSES

WILLIAM PALMER BOLLES—SURGEON AND MAN. <i>By Charles F. Withington, M.D., Boston.</i>	360
WILLIAM PALMER BOLLES. <i>By Edward Waldo Emerson, M.D., Concord, Mass.</i>	362

SOCIETY REPORT

COLLEGE OF PHYSICIANS OF PHILADELPHIA, SECTION ON MEDICAL HISTORY. MEETING NOV. 21, 1916.	364
---	-----

EDITORIALS

A VICTORY IN THE FIGHT AGAINST VENEREAL DISEASE.	366
THE MASSACHUSETTS HEALTH INSURANCE COMMITTEE.	367
A NOTICE.	367
MEDICAL NOTES.	368

MASSACHUSETTS MEDICAL SOCIETY

COMMITTEE OF 23 ON HEALTH INSURANCE.	368
--------------------------------------	-----

CORRESPONDENCE

INDUSTRIAL HEALTH INSURANCE: A REJOINER. <i>I. M. Rubinow.</i>	369
INDUSTRIAL HEALTH INSURANCE: AN APPRECIATION. <i>B. P. Croft.</i>	369
EPILEPSY AND ELIMINATION. <i>George Clymer, M.D.</i>	370

MISCELLANY

NOTICES, RECENT DEATHS, ETC.	370
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Original Articles.

RESULTS OF TREATMENTS FOR FRACTURES OF CARPAL BONES.*

By HERMAN W. MARSHALL, M.D., BOSTON.

WHEN the frequent occurrence of fractures of small bones of wrists was established conclusively by x-rays, renewed interest in injuries to these regions was a natural result; and developmental peculiarities of the carpus, as well as surgical methods of treatment were brought into prominence. Experiences of many surgeons now prove that fragments of fractured carpal bones may be removed often with benefit, although controversies regarding x-ray appearances still prevail. Opinions continue to differ in individual cases as to whether old ununited fractures are present or only developmental variations, failures of fusion of ossification centers, which give divided aspects to scaphoid bones simulating fractures.

Surgical methods have been followed by so many good late results that there is a tendency to turn to them promptly now when diagnoses have been established; but it should be recalled also that many patients recover without operations. It has seemed worth while to the writer to review the facts of the present situation from a series of eighty-one cases collected from the records of the Massachusetts General Hospital. Relative frequencies of different carpal fractures are indicated in the following table, showing that injuries to scaphoid bones are by far the most common lesions.

ing that injuries to scaphoid bones are by far the most common lesions.

TABLE OF EIGHTY-ONE CASES OF FRACTURED CARPAL BONES.

Simple fracture of scaphoid	64 Cases
Simple fracture of trapezium	2 "
Simple fracture of unciform	1 Case
Simple fracture of semilunar	1 "
Fracture of scaphoid with fracture of styloid process of radius	3 Cases
Fracture of scaphoid with fracture of styloid process of ulna	2 "
Fracture of scaphoid with dislocation of semilunar	5 "
Fracture of scaphoid with fracture of base of the first metacarpal bone	1 Case
Fracture of scaphoid, fracture of unciform, fracture of styloid process of ulna, and dislocation of semilunar ..	1 "
Fracture of trapezium with fracture of base of first metacarpal bone	1 "
TOTAL	81 Cases

All patients can be arranged in two groups, namely, those who seek treatment within a few days or weeks, and those who come with histories of troubles which have extended already through many months or years. It happened that half of the cases in the present series, forty in number, sought advice within a week of the time of their injuries.

These early cases were lost sight of usually after a brief period. Ten came only once. They secured x-ray diagnoses, had their wrists protected with splints, and then disappeared. Special interest shown by certain surgeons induced others to return eight or nine times; but three or four visits represent average numbers of hos-

* Read before the Boston Orthopedic Club, Jan. 15, 1917.

pital treatments received after recent injuries. Seven of the forty early cases returned to the hospital subsequently for other maladies, but none made any further complaint about their wrists. Presumably the majority were relieved promptly, and for this reason did not return; at least, it is safe to say that many simple recent fractures of scaphoid bones without much displacement of the broken fragments, recover with good wrist functions with very little medical care. It is the writer's opinion that subsequent occupational irritations or additional new traumata have very important influences in determining whether or not symptoms subside; also constitutional irregularities have to be considered in some instances.

Not all cases get well quickly, as is shown by fifteen patients in the series, who came first complaining of weakness and disability in their wrists a year or more after their accidents. They presumably represent results of early neglect, or continued occupational irritations, or repeated traumata, or unusually severe initial injuries, or constitutional defects. Some patients fail to recover quickly because of dislocations of bony fragments with dislocations of other carpal bones accompanying scaphoid fractures, which interfere mechanically with normal wrist motions. When these dislocations are irreducible, surgical interference obviously is indicated to remove such mechanical obstructions.

Fourteen of the eighty-one cases in the series, seventeen per cent., were operated on, and six of these reported one year later. The other eight have not been followed, as those who did respond are sufficient to illustrate the points desired; also because Codman,¹ Cotton,² Scudder,³ and others have discussed sufficiently the final results of operations in larger numbers of cases.

CASE REPORTS ONE YEAR AFTER OPERATIONS.

1. A thirty-one-year-old man, who had received an old wrist injury also a recent one three weeks before operation, had half of a scaphoid bone removed. One year later there was considerable improvement in wrist motion; but weakness complained of before surgical treatment continued afterward, and at the end of the year he was not able to do the work he did before his injury.

2. A twenty-five-year-old man, a painter, fell from a scaffolding eight years previously, sustaining a fracture of a scaphoid bone with an accompanying dislocation of the semilunar. He had the displaced fragments removed. The report one year later was that there was very little flexion in the wrist. He had a fairly serviceable hand before and after operation.

3. A thirty-five-year-old man, who had hit his wrist against a broom handle four years previously, complained of numbness and weakness and he had a fragment of bone removed. One year later there was not very great improvement for he still complained of weakness, and was unable then to do his usual work of brass polishing.

4. A thirty-eight-year-old man, a freight hauler, fell from a staging one month before op-

eration. The proximal fragment of the scaphoid bone was removed, and one year later there was only slight weakness with slight limitation of wrist motions, and he had resumed his usual occupation.

5. A twenty-one-year-old salesman fell on his hand two years before operation. A fragment of the scaphoid was removed, and the report one year later was that extension of the hand was still somewhat limited. However, he could do his usual work.

6. A twenty-one-year-old teamster fell twenty-five feet two months before operation, and broke a scaphoid bone, also dislocating at the same time the semilunar bone. The proximal fragment of the scaphoid and the dislocated semilunar were removed. One year later there still was local tenderness and weakness with limitation of wrist motions; but the patient said that he was much improved and could do his customary work.

Operations on carpal bones, perfectly done, necessarily are followed by periods of disability and readjustments, because normal relations in wrists are considerably disturbed and because some trauma accompanies surgical removal of the bony fragments. These circumstances are overlooked occasionally and give rise to disappointments over results of surgical methods. Judgments should not be made wholly upon absence or presence of weakness, and limitation of motion after operations, although it is a natural mistake to make these unwarranted conclusions when such defects are seen to persist. Support or condemnation of surgery only should come from comparisons of post-operative with preoperative conditions; patients are pleased sometimes with what appear superficially to be poor results if these changes really represent improvements over former states.

There are no adequate reasons for operative interference in recent scaphoid fractures without displacements of bony fragments. The damage done by surgery in these instances is likely to prove greater than the harm resulting from the original slight accidents which produce the lesions. Surgery is indicated in fractures without displacements only after long periods, when it has become likely that disability will be lengthened more by further delay from chronic irritation than by surgical injury. On the other hand, early surgical intervention is demanded sometimes when initial injuries have been great, and always, as before stated, when irreducible displacements exist.

In passing, it may be well to point out again that a simple fall on an outstretched hand is enough frequently to produce a scaphoid fracture. No crepitus, very slight limitation of wrist motion and very little swelling commonly are accompaniments of simple cases. The positive features may be only a persistent soreness of the wrist on use, a little puffiness at base of the thumb and tenderness over the injured bone.

Nearly all fractured carpal bone injuries become fairly serviceable in the long run whether

wrists are treated or not; at least, individuals learn how to avoid straining the weakened parts, and how to favor limitations so that tenderness and soreness subside enough ultimately to cause no further complaint.

Selection of suitable lengths of time for protection with splints is a feature of practical importance encountered in treatment of early cases. Many patients in the present series were successfully cared for with one month of complete immobilization, followed by massage, exercises and baking. Others, who neglected to return after their first visits, got well without splints if they favored their wrists enough themselves to permit repair to take place, although slight motions were taking place continually. One or two patients wore splints for five or six months without advice, and these were obliged to go through as painful limbering up processes as those who received no protection. There can be little doubt that early passive motions, light massage, and early light use of wrists accelerate recoveries, provided they are gentle enough and graduated to prevent further harmful strains and excessive mechanical irritation. One month of complete immobilization allows reparative processes to become well advanced, and this is not an unreasonably long time, but undoubtedly the period can be shortened safely in selected cases which are under observation. The question whether broken carpal bones ever unite perfectly again by bony union cannot be satisfactorily answered from the present series. It is conceivable that wrists completely immobilized for long periods may yield such a result, but either fibrous union or formation of new false joint surfaces are the usual practical outcomes.

Uncomplicated fractures of other carpal bones act similarly to scaphoid fractures in response to treatments. These patients are soon lost sight of, and presumably their fractured wrists readjust themselves to new changes, so that usefulness is impaired very little. One case of fracture of a trapezium, with an accompanying fracture of the base of the first metacarpal, came for diagnosis six months after the injury. The patient had fallen on the outstretched hand, striking the thumb especially hard, but she had been able to do her usual sewing, in spite of soreness and weakness complained of in the thumb. A removable splint immediately relieved her and she did not return again. Two other cases of fractures of the trapezium were seen early, but both were lost track of after a few days. Each person had his wrist supported by a splint at the time of departure. One isolated fracture of an unciform bone resulted from a direct blow from the sharp edge of a roller skate. This patient disappeared after wearing a splint for two weeks. One case of impacted fracture of a semilunar bone wore a splint plaster cast for several weeks, then failed to return when painful symptoms were subsiding rapidly.

Finally, an additional case will be reported to illustrate minor details and possibilities not spoken of previously:

A middle-aged man, thirty-seven years old, hurt his right wrist about fourteen years before he came for treatment. There had been occasional periods, lasting several weeks at a time, when the wrist had felt sore and weak; but he had worked, however, a number of years as riveter in the Charlestown Navy Yard. This labor included the use of a heavy steam drill weighing twenty-five or thirty pounds. The hands thus were subjected to continual vibrations and many sudden twists. An x-ray taken as soon as he came for treatment revealed an unusually clearly defined fractured right scaphoid, for which a removable wristlet was immediately ordered.

Interpretation of the x-ray was that the fracture represented a very old one without displacement of fragments, and no operation was advised in view of the fact such good function had been possible so many years under exceptionally difficult circumstances. In a month's time all pain and swelling had gone as a result of local protection, cessation of work, and personal hygienic measures. The mechanical support was removed some of the time, and in three months from the time he was first seen he was able to dig a house cellar with his hand partly protected; while a month and a half later he resumed light work in the Navy Yard. He was obliged to give up again a second time after three weeks, on account of the same symptoms of weakness and soreness in the wrist. Another x-ray revealed an unsuspected scaphoid fracture, with dislocation, in the proximal fragment of the already broken bone, which undoubtedly was present when the first plates were taken but overlooked because of the very obvious old break. The new fracture was more easily detected in the last x-ray from slipping of the smaller fragments. A small new lump could be felt near the site of fracture, which corresponds with the displaced fragment seen in the x-ray plate (F²). On looking back over the history no unusual trauma could be identified with the second break and symptoms had increased without apparent cause two weeks prior to the patient's first appearance at the hospital.

As soreness abated slowly after slipping of the newly-broken piece, it seemed its removal would give quickest recovery and operation was advised. Before this operation he could chop wood, dig clams, and use the wrist as much as needed on some days; but at other periods it became so sore that he could not depend on it. He lost patience, and was willing to take the risk of slow subsidence of soreness after surgical interference.

At operation two small loose bodies (Fig. 4) were taken out, that account for all variations in symptoms complained of. Presumably they got caught at intervals and kept up a chronic irritation as loose bodies in knee joints are known to do. One was smooth, rounded and made of cartilage. The second loose piece was an irregular triangular bony fragment from the scaphoid where it articulated with the radius. These two pieces could be detected in the original x-ray plate next to the articular radial surface, while in Fig. 3 they have worked nearer to the surface as indicated by the outline of F³, which has been retouched because of the dimness of the shadow.

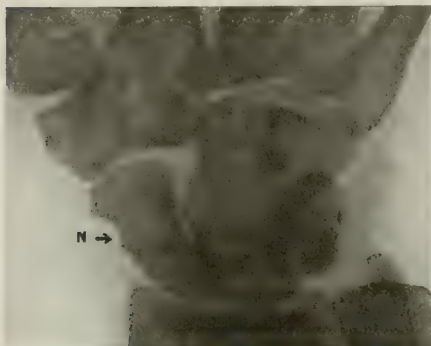


FIG. 1. Left wrist with normal undivided scaphoid bone (N).

Fig. 5 shows the wrist ten days after operation with the same fractured surface of the proximal fragment where it comes in contact with the radius; but haziness produced by loose fragments is no longer observed. Clinical symptoms practically subsided in seventeen days after operation and the patient's hand grip was 90 lbs. in contrast to the grip of the left hand of 100 lbs. Motions of the wrist then were approximately the same as they had been before operation; extension was possible to an angle a few degrees beyond straight, while flexion was practically normal. Adduction and abduction of the hand were normal in range but associated with some weakness. The patient noticed weakness, for example, when rolling a barrel of apples along on end. A fairly serviceable wrist is the result, one about which little complaint is made, yet it cannot be said that the result is perfect, as it sometimes claimed, because only through new adaptations does the restricted wrist become functionally as useful as the other one.

This case is interesting in its first stage, the old, ununited fracture illustrating how useful a wrist may be, and for what length of time

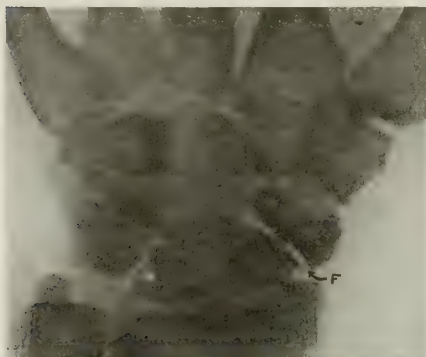


FIG. 2. Right wrist with old fracture of scaphoid bone (F). Between the radius and proximal fragment of the broken scaphoid can be seen the shadow of a small loose "joint mouse."



FIG. 3. Right wrist at a later date immediately before operation. Old fracture at F¹. Recently fractured dislocated fragment at F².

under difficult conditions it may continue so without surgical interference, while the second fracture shows that operations sometimes are imperative for restorations of serviceable joints. The two loose bodies found illustrate well the formation of "joint mice" from traumata. The

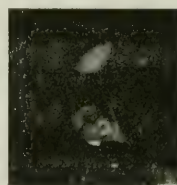


FIG. 4. Two loose bodies removed at operation from wrist joint. (Natural Size.)

smaller, oval mass was made up of cartilage largely, and presumably was associated with the first fracture; while the larger, irregular piece, which has not become smoothed completely yet, seems of more recent origin, and may have resulted from a locking of the first small fragment

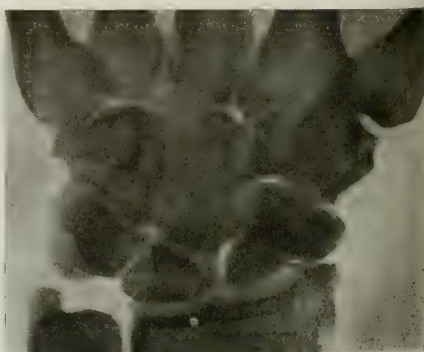


FIG. 5. Right wrist ten days after operation.

in the joint, whereby the second piece was split off. In the latter the smooth covering is so thin that its bony character is apparent. The older fracture is not an anatomic anomaly, as is indicated by the joint mice and also by the undivided scaphoid bone of the other wrist.

CONCLUSIONS.

The very large majority of injuries to carpal bones are fractures of scaphoid bones.

1. Early fractures of scaphoid bones without displacement of fragments should be protected for a short time,—one to four weeks,—then passive and active movements gradually resumed until painful symptoms subside. Such early fractures resulting from slight injuries should not be operated on, because many wrists regain good function with very little medical care.

2. Old ununited fractures of scaphoid bones, without displacement of fragments, however, should be operated on if soreness persists for a long period, or recurs frequently enough to cause serious disability.

3. Occupational elements are important ones in determining subsequent disabilities. Workmen whose occupations compel constant severe use of their wrists will be incapacitated for longer periods than those whose work requires only intermittent light use of wrists, other factors of the situations being equal.

4. The length of time which should be allowed to elapse between injury and time of operation differs widely according to different occupations, different degrees of initial injuries, and varying constitutional conditions of patients. Decisions as to surgical intervention should be made by comparisons of the existing degrees of incapacity with probable results of surgical treatment and its attendant sequelae in form of repair from surgical trauma and the disturbing of normal bony relations of the wrists.

5. Fractures with accompanying irreducible dislocations of semilunar bones should be operated on soon.

6. Perfect restorations of wrist motions after operations appear to be rare, but fairly serviceable wrists ultimately should be expected.

7. Protecting wristlets are useful for patients who are in intermediate stages, or for brief recurrences of symptoms in old cases, if supports are made removable so as to be used to regulate more accurately changing proportions of exercise and rest which have to be made in restorations of normal functions. Wristlets can be employed easily, however, in a way to furnish too much protection, and thus prolong recovery unduly.

8. Fractures of other carpal bones, so far as is known, act similarly to scaphoid fractures, and painless useful wrists presumably are ulti-

mate results in all cases; but too few cases are included in the present series to draw conclusions from.

REFERENCES.

- ¹ Codman and Chase: Fracture of Scaphoid. *Annals of Surgery*. March and June, 1905.
- ² Frederic J. Cotton: Dislocations and Joint Fractures. 1911.
- ³ Charles L. Scudder: Treatment of Fractures. 1915.

INEBRIETY AND HOW TO CONTROL IT.*

By IRWIN H. NEFF, M.D., NORFOLK, MASS.,
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HABITUAL drunkards are persons who, having a distinctive weakness, may have acquired a disease which makes them incapable of taking continuous care of themselves. This incapacity varies very much according to the individual. The characters of drunkards vary about as much as the characters of other people. Their treatment requires intelligence, medical knowledge, experience and authority, and power and means to keep them under restraint when necessary. Many of these individuals, apart from their habit of drunkenness, are of good repute and, under certain conditions, are capable of earning their livelihood. One type frequently encountered is the middle-aged or elderly man who, in consequence of his excessive drinking, has lost his self-respect and social standing. The family and friends of such a man, after repeated trials at reformation, consider him to have forfeited all his rights and privileges. Such men, if neglected, frequently become outcasts, or institutional rounders. Another class of men demanding institutional care are the delinquents. In such cases the drunkenness is clearly an expression of inborn defectivity. Both of these types, which are extremes, should be early recognized and appropriate care and treatment instituted. It is not enough to dismiss the proposition by saying that they are victims of disease through their own fault, for I fear it is hardly necessary to say to a gathering of this nature that our hospitals are filled by these, many of whom would not be there except through their own fault.

"When we consider habitual or excessive drinkers as a class we find that a large number of them are born with tendencies which make alcohol or some intoxicant their natural resource; as a rule they are naturally highly nervous and through some defect crave abnormally the excitation which alcohol or drugs confer. For these reasons, which mean instability, they are foredoomed to use intoxicants to excess; they are predisposed to drink by an unstable nervous system bequeathed to them by intemperate parents or other ancestors. This

* Read before the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 18, 1915.

instability, which is a predisposition, antedates the drinking debauches; in other words, the drinking attacks are merely symptoms engrafted on the inherited weakness. These people, then, may be considered as victims of a weakness plus a habit, which, properly speaking, they did not initiate and for which therefore censure must be largely tempered; yet they are generally treated as though they had perversely and deliberately brought about their own condition, a course not more reasonable than the punishment of people for developing an organic disease, such as neuritis, cancer, or tuberculosis.^{7*}

Recognizing that inebriety is merely a state of being overcome by intoxicants, we have learned from our experience during the past seven years that our results can be briefly expressed as follows:

1. Inebriety, whether from alcohol or drugs, is an expression of nervous weakness, the nervous weakness being inherited; founded on this weakness is a habit which we call drunkenness.
2. The inebriate is, as it were, the sum total of his personality or make-up, and the symptoms which we call drunkenness.

Inebriety therefore can be considered technically as a disease in the sense above described. The acceptance of this theory implies responsibility on the part of the inebriate, but it admits of extenuating circumstances.

Although habitual drunkenness is generally considered a misdemeanor, its association with criminality and criminal procedure has given the public the impression that the drunkard, if not a criminal in a legal sense, is so closely allied to this class of persons that the measures applicable for the control of the criminal can be consistently used in the management of the inebriate. The impracticability and futility of such methods is recognized by those familiar with the varied types of inebriety. Credit must be given to the judiciary, and particularly to the probation commission of the state, for the heroic efforts which they have made to formulate some satisfactory method of dealing with the chronic inebriate. They have recognized that he has an individuality and they have also observed that he has distinctive peculiarities, but owing to the diversity and apparent complexity of the types and the lack of facilities for studying these cases, they frankly acknowledge their helplessness and are ready and willing to coöperate with the medical profession in any reasonable way that will insure a practical method of handling these cases. The fact that 108,185 arrests for drunkenness were made in Massachusetts in 1914 is certainly a strong appeal for the inauguration of some plan which will individualize, segregate and care for the habitual drunkard.

Unquestionably a state should care for its in-

ebriate class. The evidence is overwhelming that the present punitive system of caring for inebriates in many of our states is both useless and uneconomic. The states in general are gradually seeing the vast economic waste in indiscriminate methods of treatment for drunkenness, and during the past five years special investigations have been instituted in many states for the study of this question.

Boston in a single year spent \$210,000 for making 25,000 arrests for drunkenness. The maintenance of those who were incarcerated during the same year cost the city approximately \$32,000. All the while this enormous expense tended rather to increase than to decrease the evil. The fact that forty-three per cent. of all arrests for drunkenness in a single year were found to be first offenders is an overwhelming argument in favor of a more humane and a more scientific policy in the way of saving the incipient drunkard to himself, his family and the community.

The sentimental reasons for the state care of the inebriate are convincing and conclusive. The relatives of an habitual drinker, who are often persons of good standing and good repute, are naturally not desirous of having a husband, brother or father sent to a penal institution. The stigma which affects the family of an inebriate thus sentenced is naturally objectionable. Again, the denial of care and scientific treatment to the inebriate is not only unfair to the victim, but is not consistent with the methods which the state employs toward her afflicted and dependent.

In order to give a true definition of inebriety it is necessary that we know something of the nature of the inebriate and perhaps more of the circumstances which led up to his insobriety. It is true that an inebriate is an habitual drinker; not all cases of drunkenness, however, are cases of inebriety, but all confirmed and habitual drinkers of alcohol, or confirmed users of drugs, are generally classed as inebriates. Remembering this, we are prepared to accept the statement that a comparatively small number of the users of alcohol can be said to be inebriates, although to some extent this is true of drug inebriety. There is, however, this essential difference: the greater majority of drug users cannot use drugs in moderation. Every user of alcohol can be classed in one of three categories: First, there are those who are strictly moderate in their indulgence; the persons who can be placed in this class furnish approximately eighty per cent. of all alcohol users. The individuals who use alcohol in this way can be abstinent without the exercise of much self-control; there is therefore no credit due to such persons for being sober. It is no trouble for them to keep sober because they have no desire to be otherwise. In the second category we have those individuals who drink more freely than is consistent with moderation.

* Charles B. Towns, *Century Magazine*, March, 1912.

In this class of alcohol users we come more or less into touch with the inebriate problem. The persons included in this class are those who indulge in excess carelessly or those who show the early symptoms of the development of habitual drunkenness. In the third class we have the habitual drinker or true inebriate.

We may consider that every inebriate is a victim of a constitutional peculiarity or fault of some kind. The peculiarity in question is a frank one calling for recognition of the true inebriate state of which drunkenness and the consequent erratic behavior are merely the outward or visible signs. There are two widely opposite opinions of habitual drunkenness. The modern conception of the condition denoting it a disease has too often been accepted without proper qualifications. Opposed to this opinion, there are those who declare that drunkenness is a habit and that the drinker purposely invites drunkenness, a condition which he could prevent if he so desired. The believers in the theory that drunkenness is a disease declare the alcoholic irresponsible and demand that he be segregated and be compelled to submit to enforced detention and compulsory abstinence. The adherents to what we may call the "habit" theory, who believe the victim of drunkenness to be a slave to his habit, suggest punishment in some form for the offender against society.

The acceptance of either one of these theories of drunkenness implies one remedy, coercion; in other words, the enforcement of punitive measures. The methods of punishment which are prescribed for these individuals show considerable originality and a noticeable lack of uniformity. It is not denied that in some cases of drunkenness such a method has been efficacious, but it is to be questioned whether a true case of inebriety has ever been materially or permanently helped by such a method. It has quite often been said that all inebriates are more or less insane or mentally defective, but it is our opinion that when all inebriates of all social grades are classed together, it will generally be found that the majority are neither defective nor insane. A large percentage of typical drunkards are extremely capable individuals during their sober intervals; contrary to the popular opinion, we find that a great many of these men are skilled workmen and are capable of self-support under direction and control.

We must recognize, broadly speaking, two classes of inebriates: one class are responsive to the efforts made to cure them, while the other class will not, or cannot, respond to treatment. When we speak of inebriates we can roughly class them accordingly. It is at once apparent that the ordinary hospital curative methods are not sufficient for the persistent habitual drinker; he should be carefully segregated and treated. Our experience justifies us in saying that if placed under proper conditions a sur-

prisingly large percentage of these so-called "incorrigibles" will react favorably to treatment.

During the past five years several legislative commissions have reported on drunkenness in Massachusetts. Their published results are incorporated in legislative documents, and the conclusions have been arrived at after state-wide and general investigation.

Any program to better conditions and to lessen the cost to the state must consider not only cure, but prevention. Prevention should take precedence over cure at every point in a rational medical-social study for the control of drunkenness. The Commission to Investigate Drunkenness in Massachusetts, which reported to the Legislature of 1914, gave in detail the seven fundamental ways in which this Commonwealth might reduce drunkenness from a preventive standpoint. These results, although applying particularly to drunkenness from alcohol, are referable to inebriety from the use and abuse of any intoxicant.

1. By state-wide prohibition of liquor traffic, to which might be added federal prohibition.
2. By the elimination of private profit in the sale of intoxicating liquors.
3. By more thorough enforcement of existing legislation regarding the sale of liquors.
4. By amendments to existing liquor laws.
5. By increasing and improving public instruction on temperance and the evils of excessive drinking.
6. By competing with saloons and rendezvous through public provision of wholesome recreation for all persons.
7. By the gradual elimination of those factors in the environment and heredity of the individual which may predispose him to the excessive use of alcohol or drugs.

Many of these recommendations have formerly been advanced and have been thoroughly discussed pro and con. Some of the methods suggested have been used in other states; it is yet too early to report with any finality on the success or ill-success of such legislation.

Certain definite measures for the cure and amelioration of inebriety are practical immediately, however, and to this end we believe it necessary, first, to discover the curable inebriate and give him specialized treatment; second, to place the incurable inebriate where he may work continuously for his own support, and where he will not endanger society, or, on the other hand, come unnecessarily in contact with criminals; third, to modify, when necessary, the present state statutes in order to facilitate such division, special treatment and segregation.

Recognizing the feasibility of an institution which would have adequate facilities for carrying out a definite program for the treatment of inebriety, Massachusetts has developed a

plan, now in active operation, which can be described as follows: First, a state hospital for the treatment of alcoholic and drug habitués, developed on the colony plan with an equipment sufficiently ample and flexible so that appropriate care and treatment can be given to the different types of inebriety; second, an out-patient department and clinic with broad and well-defined duties; third, detention hospitals and hospital clinics having specialized features for the care and treatment of cases of acute alcoholism. A substantial start has been made. The central state institution has been in part built, out-patient departments have been established and the coöperation of the hospitals is assured. To the trustees and those of us who are interested in the proposition the real incentive for the continuation of our work is our conviction that the public believes in the integrity and stability of the system as planned six years ago.

I feel that my paper would be incomplete if I failed to describe the method of treatment in use at the hospital. Believing as we do, that the inebriate condition has for its basis a distorted mentalization, our efforts are directed towards interesting the patient in his individual case, and having accomplished this, towards making the interest self-sustaining. Our experience has shown us that the success of hospital treatment depends upon:

(a) The ability of the patient to coöperate in treatment.

(b) Our ability to introduce into the patient's mentality some tangible substitute for the desire for artificial stimulation.

Success is brought about by attention to the patient's mental and physical hygiene, and necessarily depends on the educational measures inaugurated at the hospital and continued by the patient after he leaves the institution. The treatment must necessarily be considered as in the realm of physiologic therapeutics, supplemented by the simplest form of suggestion. The suggestion is really an auto-suggestion, the result of a correlation of impressions which the patient receives from his association with the physicians and from his relation to the hospital environment. The physician is concerned in an analysis of the individual case, which is made possible by encouraging the patient to coöperate in his own recovery, by strengthening his self-control.

This brief description of the method of treatment of inebriety presupposes what seems to be the absolute fact, that there is no known specific for the treatment of chronic alcoholism; in other words, there is no known drug that will cure inebriety. We must recognize that habitual drunkenness, as we see it in the inebriate, has a mental and physical side which requires distinctive and specialized treatment.

Any plan which is put into practice for the

treatment or amelioration of drunkenness should be controlled and administered by the state. The magnitude of the problem and the closely interwoven economic questions argue against local or municipal control.

The successful care and treatment of inebriety demands the inauguration of a definite policy which includes both institutional and non-institutional departments, both of these departments being inter-related. The institution, which is the fountain-head of the system, demands first consideration.

On the threshold of our contemplated plan for the practical care of the habitual drunkard, it appeared to us that our work should be directed: first, to the extension of individual treatment of cases; second, to securing remunerative employment for cases which were under our care and treatment; third, to compiling accurate histories of those who had been discharged from the hospital; fourth, the establishment of after-care as an integral part of the hospital.

It is therefore at once apparent that something more than the mere housing of the individual is needed. An institution for the purpose must be adaptable; it must have distinctive qualities and be especially built and equipped for the class of persons for which it is intended. Conditions are required which represent departures from the character of an ordinary institution. Lastly, the institution should be so constructed that it can adequately treat the varied types of inebriety committed to its care. The requisites of such an institution are:

(a) A sufficient area of land to provide for agricultural development and for outside employment for the patients.

(b) Sufficient plant for industrial training.

(c) A tract of land of sufficient continuity so that there will be an opportunity for the segregation of the diverse cases.

(d) Adequate provision for both male and female inebriates.

Acting on these principles a large tract of land was purchased in Massachusetts. The area selected has natural advantages. The land is largely undeveloped, thus allowing for considerable work for the inmates and affording an opportunity for affiliation and coöperation with the forestry, agricultural and other state commissions. This coöperation, in our estimation, is an essential part of our education scheme and has been conducive to economics which have been helpful in the building and equipment of the plant. The acreage, over one thousand acres, corresponds to the requirements just enumerated. The cottage, or colony, is the pivot center of our scheme. Three different colonies are contemplated; first, a hospital colony for men, which will take care of the hopeful cases; second, a detention farm colony which will provide for the more chronic and resistive type of patients; third, a hospital for women.

Out-patient work on broad and well defined lines is an essential part of the treatment. Extensions to this work are being rapidly made and it is hoped within a short time that there will be established a state-wide representation of this department. By means of the out-patient department we have been able to coöperate with 5031 discharged patients who have left the hospital during the five-year period from October 1st, 1909, to October 1st, 1915. Of this total number 1179, or 23%, are abstinent, or so far improved that they are self-respecting and earning their livelihood.

The Norfolk State Hospital, therefore, can be considered as the hub, the out-patient departments and coöperative interests as the spokes, of the wheel. The wheel can efficiently revolve only when the spokes are in accurate adjustment with the hub. The success of the hospital depends upon coöperation, which means both the coöperation of the patient with the hospital authorities and the coöperation of those interested with the hospital.

It seems superfluous for me to say that the successful management of any case of drunkenness depends on a painstaking and thorough medical and social survey. Institutional treatment, although often necessary, may really be of minor importance in some cases; indeed, I may state with considerable conviction that in many cases prolonged institution care may postpone or defeat the desired result.

It is a popular opinion, which fortunately is now in its decadence, that all cases of drunkenness are amenable to cure, the word "cure" being used relatively. While in a limited sense this is true, for all cases need consideration, it must be acknowledged that permanent abstinence cannot be expected in all cases. It is my belief that all habitual drunkards should receive expert and specialized consideration; in this way we may prevent grievous errors from developing and determine the relation of the delinquent to his family and the community.

The facts, as above stated, necessarily establish a truism, that the probability of permanent improvement is far better if the treatment is instituted in the early stages of the condition. I most earnestly request that individuals be sent to us before the victim is overcome by the mental and physical complications which so often are found in elderly subjects and confirmed drunkards.

The relation of the hospital to the public may be tersely expressed as follows:

1. The hospital, having the necessary equipment and specialized training, offers to the public a human laboratory, if I may so express it, which will help to solve some of the problems connected with the drunkard.

2. The public, by taking advantage of such opportunity, is not only benefiting the individual in accord with the laws of humanity, but is pur-

suing a course which is eminently economical and practical,—a method which is far more satisfactory than any plan which has heretofore been proposed.

INTRATHORACIC GOITRE.

BY FRANK H. LAHEY, M.D., BOSTON.

THERE is no disease of the thyroid so often overlooked by the physician or surgeon unfamiliar with thyroid diseases as substernal or intrathoracic goitre. Nearly every physician familiar with the benefits derived from surgical intervention in exophthalmic goitre, is familiar with the diagnosis of that disease. Cysts and adenomata of the thyroid occurring as frank tumors on the neck are of course so self-evident that they cannot be mistaken. Substernal or intrathoracic goitres, on the other hand, present difficulties in diagnosis apparently in inverse proportion to the degree of prominence of the upper pole of the tumor.

Substernal or intrathoracic goitres are either adenomata or cysts, originating in the right or left lower pole or isthmus of the thyroid, and gradually enlarging downward into the thorax along the path of least resistance.

There are two factors entering into the production of the intrathoracic growth of goitre. One is the fact that downward and into the chest is the path of least resistance for these growths originating at the lower poles of the gland. This is clearly demonstrated in the diagrammatic drawing (Figure 1) in which it may be seen that extension backward is limited by the trachea; forward, by the sternothyroid muscles. Note further in this figure that the attachment of the sterno-thyroid muscle is not at the top of the sternum, but on its posterior surface, an arrangement best suited to guide into the thorax any adenoma or cyst with a tendency to become intrathoracic. Lateral extension, as may be seen in Figure 2, is limited by the sterno-mastoids and scaleni muscles, the great vessels, and by the backward limiting curves of the clavicle and first rib.

The second factor in the production of intrathoracic goitres is the upward and downward motion of the thyroid gland in deglutition. Again referring to Figure 1, it may be seen, with the occurrence of an adenoma or cyst on the inferior edge of the thyroid, how each act of swallowing moulds a bed in the downward direction for the growth. This figure further illustrates how, when the tumor or cyst has already become intrathoracic, the natural moulding of the mass will be more or less roughly into the shape of a pear, with the larger portion within the chest, no matter how general the development of the tumor may be.

If the greater part of the tumor be above the

sternal notch or either clavicle, attention of course is at once directed to it as a possible cause in the production of attacks of suffocation, interference with swallowing, or huskiness of the voice. If, on the other hand, more than half of the tumor be within the thoracic cavity, it may either be overlooked or the visible portion be considered a tumor in itself too small to be a causative factor in the production of any

in diameter, showing nothing upon the neck, and the trachea was dislocated so that it formed almost a half-circle. This case required that the sternum be split and separated before the upper aperture of the thorax could be made large enough to permit the exit of the goitre from the chest.

The symptoms produced by these goitres are a feeling of pressure beneath the sternum on

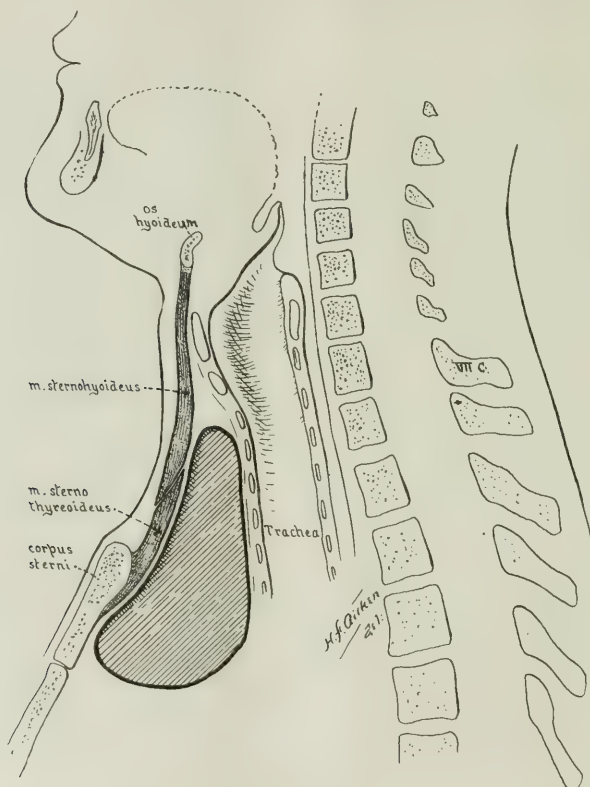


FIG. 1.

of the foregoing symptoms. It is the author's opinion that the fact that these symptoms are frequently the result of intrathoracic goitres has not been sufficiently impressed upon, or made clear to, the physicians whom these patients first consult for what is apparently a trivial ailment.

Intrathoracic goitres are by no means uncommon in the practice of a surgeon who is seeing and operating upon goitres constantly. They of course vary from the type in which only the lower pole of a cyst or adenoma dips into the chest, up to that type represented by a case recently operated by the author. The goitre was completely intrathoracic, four inches

swallowing; the uncomfortable feeling of the mass ascending and descending as it does on swallowing; huskiness of the voice; dyspnoea of greater or less degree, depending upon the size and situation of the tumor; and intermittent attacks of suffocation. The last symptom, intermittent suffocation, has occurred in two of the author's cases, both of which were large intrathoracic cysts which must have had the faculty of suddenly distending to sufficient size to produce partial, and in one case almost complete, respiratory obstruction, as in both cases mild attacks similar to the ones necessitating operation had occurred and been recovered from without sur-

gical intervention. In the latter case the operation was done as an emergency one, the patient being unconscious, and the cyst walls were found tensely stretched with the contents under great pressure. Puncture of the cyst immediately produced complete relief from the obstruction and permitted careful and deliberate dissection and removal of the sac of the cyst.

One should suspect intrathoracic goitre in a patient presenting any of the before-mentioned symptoms. It should also be suspected in some cases of asthma. In the case mentioned above, which required splitting of the sternum for the

patient's chin depressed upon the chest, distinctly to palpate the lower poles of the thyroid as the patient swallows. It is at once evident that if an inferior pole on one side is readily palpable, and that of the opposite side not, the diagnosis is definite, even though no swelling be present on the neck.

The operative treatment resolves itself merely into the mechanical problem of elevating the buried mass out of the chest upon the neck. These goitres must be delivered *in toto* and never by morcellation or piecemeal, as the latter method results first in severe oozing, which can

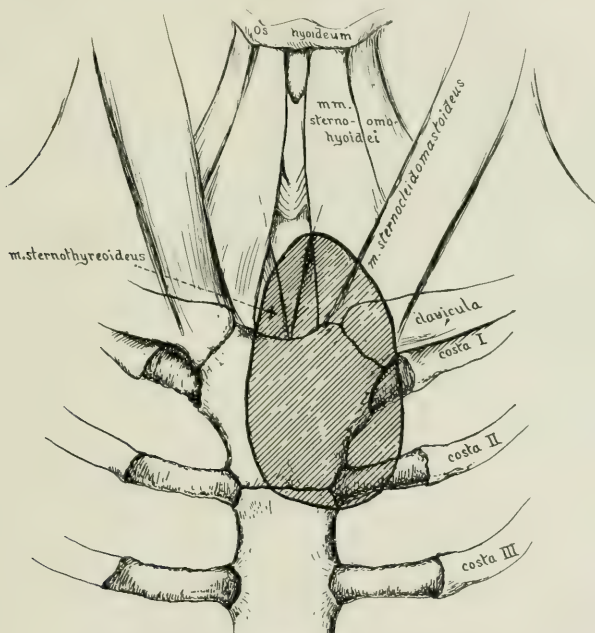


FIG. 2.

removal of the goitre, the patient had been treated for a considerable period of time for asthma, even to having his turbinates removed by a rhinologist, before coming into the author's hands.

The condition being suspected, the diagnosis may be made by the demonstration of abnormal dullness over the upper part of the chest, by the demonstration of the tumor mass within the chest by the X-ray, and by the inability to demonstrate the inferior pole of either side with the palpating finger. A manoeuvre for demonstrating the inferior poles was hit upon by the author a few years ago, and has been found to be of the greatest value in the diagnosis of this condition. After examining a number of thyroid glands, one soon becomes able with the pa-

be controlled only by ligature of the main blood supply to the tumor, and secondly, in leaving well-nourished segments of the tumor behind, from which further intrathoracic growth may occur.

The difficulty of the procedure of elevation depends entirely upon how deeply located the tumor may be, and whether or not the intrathoracic portion of the mass is too large to pass through the upper aperture of the thorax. If the mass be too large to permit of extraction from the chest, the manoeuvre practised by the author in the above-mentioned case may be made use of. A long, straight incision over the middle of the sternum may be carried from the center of the curved goitre incision down nearly to the tip of the sternum, the periosteum and apo-

neurosis freed from the bone, and with a sharp chisel the sternum split from top to bottom. After splitting the sternum a blunt instrument, such as a periosteal elevator or narrow-bladed retractor may be inserted into the crevice in the bone and turned at right angles, acting then in the nature of a wedge. If the finger is then inserted behind the upper portion of the sternum, a taut ligament, the interclavicular ligament, may be felt running between the two sternoclavicular articulations and preventing further spreading of the sternal fragments. This is easily cut with the point of a sharp knife. Successive wedges may then be inserted until the upper thoracic aperture is of sufficient diameter to allow the escape of the tumor.

Fortunately these intrathoracic growths, unless malignant, are well encapsulated and are so loosely adherent to surrounding structures that they may easily be freed by sweeping the index finger around them.

It is the author's preference when possible to pry these goitres out of the chest by gradually working the index finger-tip down one side of the tumor and then beneath it. In this way there is no danger of rupturing the tumor, and it is delivered whole upon the neck, where its blood supply may be comfortably and safely controlled. When, on account of the depth of the tumor, it is impossible to insinuate the finger-tip beneath the goitre, it then becomes necessary to pull it out from its bed by dragging upon its upper pole with hemostats or double hooks clamped into that portion. This in itself will not be successful unless the greater part of the goitre has been liberated from its surrounding structures by sweeping the finger around it, and by continuing to do so as the goitre gradually ascends from its bed within the chest.

This method is inferior to the prying method, first because of the danger of rupturing the goitre if it be a cyst, making the removal of its secreting walls difficult; and secondly, because of the danger of fracture, breaking up, and oozing of an adenoma, unless it frees easily from its surrounding structures.

Prying out is superior to dragging out, because it is necessarily true that with the former method, if the finger-tip is able to reach the bottom of the tumor, all adhesions around the tumor have been broken up. With the latter method, the fact that it is impossible to reach the bottom makes it necessarily true that the tumor is fixed by adhesions below the lowest point reached by the finger.

The tumor delivered upon the neck, control of the blood supply at once becomes easy. If reference is made to Figure 3, illustrating the downward course of the inferior thyroid artery (in the minds of many it is thought to ascend as does the thyroidea ima when present) it will be seen that the tumor as it lies upon the neck must perforce have a long vascular pedicle, since for each fraction of an inch that the goitre de-

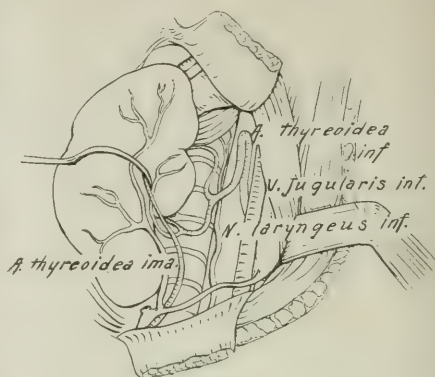


FIG. 3.

scends into the chest, the same distance must be added to its vessels by the stretching of both superior and inferior thyroid, descending as they do from above downward. Thus, with the tumor delivered, clamps may be applied to the vascular pedicle, care being taken to apply them as close to the gland as possible to avoid the recurrent laryngeal nerve, which may either run through the vascular pedicle or have been pushed to one side. All oozing is carefully controlled, a cigarette or rubber dam drain inserted, and the wound sutured as in all goitre operations. The drain is removed on the fourth or fifth day and further drains of rubber dam inserted until the cavity has been obliterated.

The author has found that the form of anaesthesia practised by him in all goitre operations as far as possible,—that is, morphia, scopolamine and novocaine,—has been the ideal anaesthesia. With ether, breathing may be difficult and oozing is certainly more profuse.

Intratracheal anaesthesia was necessary in the case in which the sternum was split, as chiseling of bone does not fall within the domain of local anaesthesia, and further because the laryngologists had reported marked narrowing of the trachea, suggesting the possibility of collapse of that structure from the intrathoracic manipulations.

INCREASE IN REQUIREMENTS AT COLUMBIA.—It is announced that additional requirements will be included in the two-year collegiate course preliminary to the medical course in Columbia University. Courses in chemistry will be added so that instead of seventy-two entrance points being required, an equivalent of eighteen full months of academic work will be necessary. It is contemplated, as soon as proper hospital facilities can be procured, to add another year to the medical course to include a hospital internship.

SUPPURATIVE LABYRINTHITIS: A
CRITICAL REVIEW OF ITS DIAGNOSIS
AND TREATMENT.*

BY ARTHUR B. DUEL, M.D., F.A.C.S., NEW YORK CITY.

ALTHOUGH the subject of orientation and equilibration, and the intimate connection of the vestibular apparatus with this function, have occupied the attention of otologists for more than a century; and although much of the most important experimental work connected with it was done thirty or forty years ago; the surgery of the internal ear lesions resulting from inflammatory invasion has been developed well within the past two decades. I remember in the course of a summer in Berlin, about fifteen years ago, seeing the operation for suppurative labyrinthitis performed by Dr. Jansen on two chronic cases and one acute case. At that time the test for loss of hearing was very inadequate, and no one had suggested separate examination of the vestibular apparatuses. I recall that the operations impressed me with the importance of more careful anatomical study of the petrous bone with reference to operative work, and that the technic of the operation interested me much more seriously than the diagnosis or the indications for operation.

It was not until Bárány, about ten years ago, presented the noise apparatus, which enables one quickly and positively to demonstrate complete loss of hearing; and the caloric reaction, which enables one separately to test the presence or absence of the static function in each ear, that surgery of the labyrinth was placed upon its present sound footing. Compared with all other means for determining the necessity of surgical interference in the internal ear, these two tests stand out in paramount importance. Indeed, in my own opinion, they are the only necessary functional tests. While the other functional tests, like whirling, and the galvanic current, are interesting and useful in clarifying our minds regarding the static function, and therefore valuable in demonstrating certain reactions, in the study of the subject, when we get down to an actual clinical case on which the question of surgical interference is to be settled, they are, to my mind, useless in comparison with the ones first mentioned. This is due to the fact that the *whirling test* can never cause a reaction in one vestibular apparatus at a time, provided that both are functioning; and despite the fact that an imbalance of the two apparatuses may be demonstrated, by the after-nystagmus resulting on turning, first in one direction and then in the other, it is well known that compensation takes place, sometimes in a longer, sometimes in a shorter, period after complete destruction of one side, and therefore a negative result will never be convincing. I

believe it is absolutely useless in acute cases when a spontaneous nystagmus is present; and that it may be so in the chronic cases, owing to partial or complete compensation by the sound side. It seems useless in the acute cases because, with an imbalance sufficient to have caused the spontaneous nystagmus, the added confusion of the whirling brings out only phenomena which it is almost impossible to observe accurately. From another point of view, even if the information gained should be accurate, it seems hardly wise to jeopardize the chances of recovery of so ill a patient by subjecting him to this additional insult when a much more positive test (the caloric) may be used with comparatively little discomfort. The whirling chair, then, in my opinion, should be relegated to the armamentarium of those who are teaching or studying the phenomena of static equilibrium, and should be discarded as a positive diagnostic factor in labyrinthine surgery. No one would think of not verifying its positive indications by the more accurate caloric test, and no one should accept its negative indications as being of any particular value.

The *galvanic reaction*, while it enables one to test each labyrinth separately, is confusing from the fact that it may excite reactions by stimulating the vestibular nerve-trunk, even when the end organ is not functioning. It is, therefore, in my opinion, useless except for the teacher or student, and is of no positive aid in determining the necessity for surgical interference, as compared with the caloric reaction.

These two tests stand in relation to the surgical diagnosis of labyrinthine involvement in about the same importance that transillumination occupies in the diagnosis of accessory sinusitis. Transillumination may be of positive value or it may not; in these days of radiography, no one would think of accepting its most positive indication without the confirmation of a radiogram.

The "*fistula test*" may be positive in the absence of a positive caloric reaction, or it may be negative in the presence of a positive caloric reaction. This, of course, will depend on whether there is a fistula present or not, and whether there is a vestibular function present, or not; but one will seldom find the caloric test negative, although it may be delayed or weak; the fistula test is positive, while the fistula test, even in the presence of a fistula, has no diagnostic value unless it is positive.

There is another important factor in connection with this test—and since I am on the subject I may as well finish it now, although it may be somewhat out of place. The fistula symptom is present only in cases in which a suppurative process has extended to the membranous labyrinth, either by erosion of bone, by a necrotic process, or by extension through a dehiscence in the bony capsule. We seek for it in cases in which the symptoms point to a lesion which has

* Read at the meeting of the New England Otological, Laryngological and Rhinological Society, Boston, Nov. 23, 1916.

not invaded the endolymph. This is in a type of cases (the so-called "circumscribed") which often suddenly become active, acute, and develop into the most serious complete endolabyrinthine involvement. When we find a fistula during the course of an operation, every surgical instinct urges us not to probe or in any way exert the slightest pressure or traumatism on the fistula, and we so instruct our students. (This applies to cases where a functioning labyrinth has been demonstrated). Under these circumstances, who can say that the fistula test, once applied, may not be the cause of converting a peri-labyrinthitis into an "acute diffuse suppurative one?" The pneumatic pressure necessary to bring about the reaction cannot be calculated to fit all cases, and certainly the fistula test, applied as we usually see it, is quite as dangerous to the welfare of the patient as the probing or euretting during an operation,—which we all abjure with such holy horror.

If the caloric test is positive, then, or can be demonstrated in even its weakest degree, one can well afford, in the interest of the patient, to wait and discover by inspection, at the time of a radical operation, whether or not a fistula is present. If the caloric test is negative,—hearing also being entirely ablated,—there may be a slight justification in applying a fistula test to determine whether or not there is any remaining vestibular reaction. With any hearing present, however, there is sufficient contraindication to operative interference on the labyrinth to make the fistula test unnecessary, since at the time of the radical operation this can be determined by actual inspection. Here again, then, a test which is interesting and often very illuminating can only be practiced with certainly always a slight, and in many cases a grave, danger to the patient. If this test is used at all, it should be undertaken with great care, using the slightest pressure at first, and only increasing it, on negative results, up to a point which the investigator thinks (it must be guessed at) would not be sufficient to break through the possibly weakened membranous labyrinth wall. Having once demonstrated the presence of a fistula by this method, I consider it very bad practice to go on demonstrating it repeatedly, as we often see done for the illumination of one surgeon after another, in both hospital and private practice. The life of the patient with such a lesion is so seriously menaced, by possible extension into fatal areas by the experiment, that one should—if he attempts it at all—record the result once for all time.

This leads me into another digression. Much of the experimentation or demonstration of various interesting phenomena connected with an inflammatory involvement of the labyrinth might, in the interest of the patient, be well taken for granted. For example: as I have just said, if one will make use of a dangerous fistula test, he might at least be considerate enough,

if positive, not to repeat it. If a patient suffering with an acute labyrinthitis has manifested symptoms which show that both the hearing and static sense are ablated, one may as well take it for granted that if made, to stand he will fall toward the side of the lesion; that if whirled, he will probably show certain well-known reactions; that if moved about, he will exhibit nausea and vomiting. Now, in most of the cases reported we see the results of these various tests recorded. We all know that these phenomena would have occurred, and the man who has demonstrated them again has in many instances done so to the detriment of his patient; for we know that perfect quiet is very essential to the prevention of extension from an endo-labyrinthine lesion to the meninges, and may be so for the prevention of an extension from a peri- or para-labyrinthitis into the endolymph. To say in one breath that a patient should avoid undue excitement and any action which might jar the delicate barriers which nature is attempting to erect to prevent extension to the meninges; and in the next breath to take such a patient out of bed to demonstrate that he will fall in a certain direction on attempting to stand or walk, or that he will show certain reactions to the insult of whirling him in a revolving chair; or even to stirring him about in bed, or having him sit up in order to demonstrate a difference in the direction of nystagmic movements; or to provoke nausea and vomiting; is, to my mind, an exhibition of bad judgment, or bad practice in the management of the case.

All these questions of whether the patient will fall in a given direction or react to certain experiments, have been settled; we know they will do it. If that is unknown ground to anyone, he should either accept it as a fact established by others, or learn it for himself on chronic cases, operated cases, and animals, rather than by demonstrating it by experiments on his acute case in which the demonstration may be the last straw which "breaks his camel's back."

This leads me to another somewhat critical position regarding the clinical diagnosis of labyrinthitis. We are deeply indebted to the Vienna school for their painstaking efforts to record the last detail of their cases, for their enthusiastic rivalry to present some new phase of an intricate subject, or some added factor in the differential diagnosis of the various types of labyrinthine inflammation. Their efforts to subdivide their cases and reduce each one to its lowest terms have been due in part, I think, to a desire to present a fixed or standardized formula, with definite symptoms for each, and a definite treatment for each. This might at first thought seem to simplify the matter for students; but I believe that instead of accomplishing this object they have unnecessarily complicated the question, and have led those who approached their first cases of labyrinthitis into a

feeling of bewilderment lest on the one hand, they should misinterpret the clinical symptoms and be led into performing an unwarranted operation, or on the other hand be influenced into too long deferring a necessary one. The cases I am speaking of are all those which have resulted from a suppuration in the middle ear.

The question which confronts one in such a case is: Is this acute or chronic? We know that no acute case of labyrinthitis can be present without manifest symptoms. We must remember that symptoms of an acute labyrinthitis may be present in either an acute or a chronic suppurative otitis. The first evidences of an acute inflammatory involvement of the labyrinth are: impairment or loss of hearing, and tinnitus aurium from involvement of the cochlear apparatus; and loss of equilibrium, vertigo, nausea and vomiting, and nystagmus resulting from loss or impairment of the vestibular apparatus. Either one or both of these impairments or loss of function may be present in any acute case. If either function is present in any degree, it is safe to say that an acute suppurative endo-labyrinthitis, at least of an operative character, is not present at that moment. If both functions are ablated, the case may or may not be one of acute suppurative endo-labyrinthitis. If the loss of function has been very rapid (within a few hours) following a virulent acute suppurative otitis, or following the fistula test, or any operative interference in a case in which there has been a peri-labyrinthine inflammation, the chances are greatly in favor of the lesion being an acute suppurative endo-labyrinthitis. If such is the case, there will be no return of function, even though the case recovers without operation. On the other hand, if the loss of function came on slowly, with irritative symptoms showing first for a number of hours, or days, or weeks, there may be an eventual complete loss of both functions, followed by final recovery or partial recovery of one or both, provided the labyrinth is not operated.

It can be readily seen from these incontrovertible facts, that in any case of acute labyrinthitis we are brought face to face with the question of whether or not we shall operate upon a case which is in imminent danger of an intracranial involvement. The clinical symptoms from which we are able to elucidate the question may be identical, and if all cases were operated upon to relieve such symptoms there would undoubtedly be some which had they been let alone would have recovered with considerable function; on the other hand, some might be caught at the proper moment and drained with sufficient skill to prevent an intracranial involvement; on still another hand, there would undoubtedly be some cases in which the operative interference itself would precipitate the very cataclysm which the operator was endeavoring to avert. By this, I mean that the excavation of bone necessary to accomplish

the drainage—removed in the most ideal method imaginable—cannot help but be a menace to the delicate fabric which nature in every such case is attempting to erect between the meninges and the infected area. The thought of this great danger of traumatic production of the very mischief one is trying to avert, has been growing upon me for years, and although I have carefully avoided employing mallet and chisel,—the use of which I consider extremely bad technic on account of the violent concussion,—I still feel that in these acute cases even the most careful excavation by the use of rongeurs, curettes, and drills will, in a slight degree, present the same possible danger.

Under these circumstances, I am strongly of the opinion that any acute labyrinthitis showing no symptoms outside of the labyrinth stands a better chance of recovery unoperated until the acute symptoms have subsided. This may mean—depending upon the condition of the mastoid—a few days or a few months, or for all time. During this stage of acute symptoms, the endeavor should be to secure complete rest for the patient. If there were a question of whether I would operate on such a patient, or not operate, and in the meantime subject him to the insults to which he is usually subjected,—I should say by all means operate. I mean by this, that to take such a patient and stand him up, or ask him to endeavor to walk, to note which way he falls; or to have him sit up in bed and put him through hot and cold water irrigations; or to put him in a whirling chair and revolve him several times in each direction; or in any way to disturb him so as to provoke the violent vomiting which such patients are likely to have at that time, is quite as likely to add the traumatic shock which might break down the barrier to the meninges as a carefully wrought operation, but without presenting him at the same time with the advantages which the drainage afforded by the operation would provide.

Now, what symptoms are necessary to hold us in this waiting position?

Just two. First, loss of hearing. How is this demonstrated? With a suitable noise apparatus shutting out the sound side, the patient is unable to hear shouted words or a Galton whistle.

Second, he has a nystagmus of the vestibular type,—the slow movement of which is toward the diseased ear. (I shall speak more at length on this symptom a few moments later.) It does not matter whether the nystagmus is horizontal or rotatory in character,—you simply wish to know if a nystagmus characterized by a slow movement in one direction is followed by a rapid movement in the other direction. If the slow movement is toward the diseased side (it is always sure to be, if the hearing is ablated), it is the result of a great impairment or a complete loss of function on the diseased side. If

once or twice in your lifetime you see the slow movement away from the diseased side, with quick recovery toward it, you may be certain that the labyrinth on the affected side is functioning; that the nystagmus is the result of stimulation; and that the case has no question of an immediate operation in sight, because there can be no endo-labyrinthitis present. In such a case, there would also almost certainly be some hearing present.

We all know that the acute symptoms in such cases rapidly subside. The function—hearing, static sense—may partly recover, entirely recover, or be completely lost. This applies to one or both senses. In the meantime, the condition which will be left in the labyrinth, depends upon what sort of resolution is taking place. Of course, the cases which recover function have not had a suppurative invasion of the endolymph. It is even possible that some of the cases which recover with loss of function may not have had a suppurative endo-labyrinthitis. This is drawing pretty fine, however, as all of them have had an inflammatory invasion of the labyrinthine walls sufficient to impair or completely destroy the function of the delicate end organs in the cochlear and vestibular apparatus. The distinction only indicates how imminent meningeal involvement had been. There is no way of knowing which is present at the time. The case will either have recovered with or without function, or will have rapidly passed into what, for all practical purposes, may be considered a chronic labyrinthitis.

What symptoms during this anxious period of waiting should lead one to operate?

First: a temperature of over 100°, accompanied by headache, photophobia, exaggerated reflexes, a positive Kernig, might be an indication that a beginning meningeal irritation was taking place, and no one should hesitate for a moment to operate, if a lumbar puncture verified the suspicion,—not only draining the labyrinth spaces but also uncovering and incising the dura as nearly as possible at the external auditory meatus, and possibly over the temporo-sphenoidal lobe as well. This operation would be done not alone for the labyrinthitis, but also for a beginning meningitis which had not been averted by zealous care and watchfulness.

Another situation might be present which would present some of these symptoms and which might justify an operation in the midst of an acute labyrinthitis, but which might not demand an invasion of the labyrinth. This situation is more likely to arise in an acute labyrinthitis coming rapidly on top of an acute otitis before or without any clinical evidence of involvement of the mastoid. Such a case might be running a high temperature owing to an acute follicular tonsillitis or an acute nasopharyngitis, or from an acute suppuration of

one or several nasal accessory sinuses,—the direct infection of the ear having occurred in the midst of their acute symptoms. Headache might be present from the high temperature; there might be some question of stiffness of the neck from glandular infection; there might be a questionable or very positive evidence of an acute mastoiditis; or a sigmoid sinusitis. In such a case, I believe one is warranted in operating the mastoid, with as little concussion as possible, in the presence of an acute labyrinthitis,—being guided at the time of operation as to whether or not the labyrinth should be drained, by a spinal puncture and examination of the fluid for symptoms of meningitis. This can be done, where laboratory facilities are easily available, without any delay, the report being returned to the operator long before the mastoid excavation has been completed.

In the absence of evidence in the cerebro-spinal fluid, of a beginning meningitis, I should, even under these circumstances, advise leaving the labyrinth alone except in rare instances. I am quite aware that this practice is considered too hazardous by many, but my own experience and that of others with whom I have seen cases, has been fortunate enough to warrant that conclusion, for the present at least.

Reverting for a moment to the subject of spontaneous nystagmus (one of the manifest symptoms of acute labyrinthitis) you will notice that I spoke always of the slow movement of the nystagmus first, and always of the slow movement as the one of diagnostic importance. You are aware that all nystagmus of a vestibular origin is characterized by a slow movement in one direction followed by a quick recovery movement in the opposite direction. You are also aware that the slow movement is the only one for which the vestibular sense is responsible. It is a very good thing also to keep constantly in mind that the slow vestibular movement is always away from the side which is exerting the most powerful influence. The vestibular impulses which keep us constantly informed of our position in space and influence our vision in fixing on moving objects, or on stationary objects whilst we are moving, might—for purposes of demonstration,—be compared to a billiard ball held in a stationary position by three rubber fingers on either side by an equal pressure from three different angles. You can well imagine that the least let-up in tension on any of the fingers would mean that the stronger pressure from its opposing finger would move the ball toward the weaker side, and exactly in the plane represented by a line drawn through the weakened finger and its protagonist. Now a labyrinthine stimulation might increase the impulses on that side to make a stronger "push" than that of the opposite normal side; the eyes would then rotate slowly toward the normal side, making a rapid recovery movement toward the stimulated side. This may

happen in the very earliest stages of labyrinthine involvement.

In an involvement of the labyrinth which in the least impairs or destroys the function of the vestibular apparatus, the impulses from that side are weakened or ablated entirely. Going back to our billiard ball the normal impulses from the sound side will push it toward the weakened one. The vestibular movement of the eyes (the slow movement of any vestibular nystagmus) then, is invariably away from the side sending out stronger impulses, so that it follows that a slow movement away from a diseased ear must mean increased function of an over-stimulated vestibular apparatus.

On the other hand, a slow movement of the eyes (of vestibular origin) toward a diseased ear, cannot be anything but the result of a weakened or absent function on that side. The normal impulse of the sound ear has produced this imbalance.* Suppose that we imagine another influence, quite outside of the little rubber fingers, which intermittently, violently, and rapidly jerks the ball back to its original position by a much more powerful impulse than they exert. This would typify a central influence on the eye, acting from a centre quite separate from the vestibular apparatus which in vestibular imbalance is entirely designed as a compensatory act. Why, under such circumstances, have we fallen into the habit of naming the nystagmus from this quick compensatory movement, instead of from the slow movement absolutely of vestibular origin? Even if it does not upset our train of thought in observing any case with labyrinthine symptoms, it fails to do so only because we transpose our terms. We cannot think of it properly without transposition; therefore why should we not at least cease designating nystagmus by the direction of the quick recovery movement?

We might say, in describing symptoms, that a nystagmus of vestibular character is present. This would mean that there is a slow and a quick movement. If we wished to be logical, we might say "the slow movement (the vestibular one) is away from or toward the diseased ear,"—as the case might be. Without transposition of terms the beginner—and the experienced diagnostician also, for that matter—might then have a definite notion of what was happening in the vestibular apparatus.

We have thus far said nothing about the diagnosis or treatment of a chronic case. All chronic cases are characterized by the fact that there are no gross manifest symptoms. We discover indications of a chronic labyrinthitis in the course of a functional examination of a case

NOTE: I wish to make it quite plain that I am speaking of vestibular lesions only. It is well known that a cerebellar lesion would induce a nystagmus in just the opposite direction. Destruction of a labyrinth would produce a nystagmus the slow movement of which would be toward the destroyed side. Subsequent involvement of the cerebellum on that side would reverse the nystagmus. There are many differentiating phenomena brought out by pointing tests, direction of falling, etc., a discussion of which is quite beyond the limits of this paper.

of suppurative otitis which has formerly passed through an acute labyrinthitis, with destruction of both hearing and static sense. The clinical history of a previous train of symptoms similar to those just recorded in the acute cases, might lead us to expect to find such a lesion. The demonstration of the presence of a dead labyrinth is perfectly simple. The functional test of hearing will show its complete ablation. The caloric test will show complete loss of function on the diseased side. You will remember that for practical purposes I included as chronic cases all acute cases which had ceased to exhibit spontaneous evidence of labyrinthine involvement. There is no need whatever of hesitating to employ for purposes of experimentation any of the tests which were so severely criticised in the investigation of acute cases. The rotation test may demonstrate a very marked imbalance in the vestibular apparatuses,—the after nystagmus resulting from rotation in one direction being much more marked than that in the other. If this is the case, standing with the eyes closed; walking forward or backward with the eyes closed; walking forward and suddenly looking in either direction; attempting to do things in the dark which formerly could be easily done; standing on one leg; walking or standing on an inclined plane,—will all, in various degrees, show an unstable equilibrium, amounting in some cases to complete loss. If the patient is whirled, and his head placed in one position, he will fall in a certain direction; and if whirled and the head placed in another position, he will fall in another direction. The extent of his response to these experiments will depend upon the rapidity with which he has compensated for the loss of function of one of his vestibular apparatuses.

In a general way, the length of time following the complete destruction, will have much to do with his responses to these experiments. Nevertheless, just as one person may learn to walk a narrow plank or do some unusual athletic feat very quickly, while another may take a long time to do it or never be able to do it at all, so we may measure the variation in compensation for loss of one static apparatus, that we may find in any such case. It follows, then, that after all, no matter how many experiments we may try from an interest in the phenomena—all of which we may predict if we know there is a dead labyrinth present—we are led always to the confirmation of any evidence we may derive from them by the result of the caloric reaction. If there is any remaining function in either the cochlear or the vestibular apparatus, an operation for draining the labyrinth is unjustifiable.

For practical purposes, therefore, if we have neither the time, nor the apparatus, nor the inclination, it is not necessary to do more than make the functional tests of hearing and the caloric test for vestibular reaction, in order to

determine—so far as functional tests go—whether or not a chronic labyrinthitis should be subjected to operation. To my mind, a fistula test in these cases is fraught with quite as much danger as in the acute cases, because one never knows how large the fistula may be nor how insecure the barrier which nature has erected between the meninges and the suppurating focus.

It has been stated by a man of wide experience, and reiterated by many who have followed him, that complete compensation for loss of function on one side, as evidenced by the whirling test, is a contraindication to invasion of the labyrinth at the time of a radical operation, on the ground that in such cases the labyrinth has been healed by the deposition of bony or fibrous tissue in place of the former purulent material. This seems an irrational conclusion, inasmuch as I have operated on several cases in which the whirling test showed almost perfect compensation, yet which at operation revealed necrosis of the labyrinthine wall and purulent foci in both the cochlea and vestibule.

The fiat has gone forth from another man of large experience, and has been widely accepted, that no radical operation should be performed on a chronic suppurating ear, in which a dead labyrinth has been demonstrated by functional tests, without opening the labyrinth at the same time. This also I think is an unwarranted conclusion, inasmuch as a radical operation on such a case of very long standing seems justifiable without invading the labyrinth, unless a very definite lead into the labyrinth is revealed on careful inspection. This is more than ably supported by the conclusion just mentioned by the other man of wide experience.

From my own experience, I would say that no radical operation should be done on an ear showing a dead labyrinth without the intention of entering the labyrinth if careful inspection showed any lead in that direction.

The reason why this fiat went forth was, I believe, because so many such cases operated, without drainage of the labyrinth at the same operation, resulted in the conversion of a latent focus in the labyrinth into an acute meningitis. The cause for such a catastrophe could be attributed only to a traumatic rupture of barriers which had been walling off the purulent focus from the meninges. This only emphasizes the position of those who insist that operation in such cases should be done with extreme caution for the avoidance of concussion or rough manipulation of any area which might possibly be leading into the labyrinth, unless such manipulation was to be immediately followed by free opening into both vestibule and cochlea.

Those who will operate with such care that they feel certain they have not broken down barriers which have held for months or years,

may—if they find no lead into the labyrinth—safely omit drainage of the labyrinth, with the expectation that the majority of such cases will recover without it. Occasionally a case may require a later labyrinthine exenteration, owing to the fact that latent foci of infection were present, which did not show sufficiently gross evidence on inspection to lead the operator to enter it at the first operation. It is my conviction that this practice would avoid the necessity of the more extensive operation in many instances, and would not subject the patient to added danger in those cases that may subsequently require the second operation.

A word as to the kind of operation advisable in these different cases.

Inasmuch as no acute case is operated unless early symptoms of meningeal involvement are present, it follows that any operation is inadequate which falls short of draining the dura at the same time that the labyrinth is opened. Such cases should have the vestibule opened both in front and behind the facial nerve, the cochlea uncapped, and the scala and modiolus entirely removed so that the meningeal fluid washes freely through. The plate from the lateral sinus to the petrous pyramid should be entirely removed, a slit made in the dura as near the internal auditory meatus as possible, and drainage of the meninges at that point facilitated by a ribbon of rubber tissue inserted through the slit. A similar drainage of the temporo-sphenoidal region should be made if there is evidence of rapidly extending meningitis.

Any chronic case exhibiting evidence of meningeal involvement should have a similar operation. The chronic case, however, which exhibits only a suppurating labyrinth, should be opened in front and behind into the vestibule, the cochlea uncapped with extreme care to avoid breaking the modiolus down to a point which will open a communication with the meninges. If the granulating, suppurating cavities are opened and washed out, they will heal rapidly. It is quite inadvisable, in my opinion, to curette granulations from these cavities, for fear of opening up an avenue of infection either through the aqueductus cochleae or the aqueductus vestibuli. It is advisable to avoid removal of these protecting granulations, just as we now avoid curetting the granulations in epidural or perisinuous abscesses. Free exposure, washing, and adequate drainage, will be more successful. The removal of the inner plate, from the sinus to the petrous pyramid, in these cases without any meningeal symptoms, prolongs the operation and increases the danger, without in any way aiding the recovery of the lesion.

I have said nothing definite about the classification of inflammatory conditions of the labyrinth, except to hint at the idea that it had been made too complicated. You will note that I have mentioned only acute cases in which the endo-lymph was invaded, and those which gave

acute symptoms from the peri-labyrinthine inflammation. I have no idea of insisting that the classification into (1) circumscribed labyrinthitis, (2) diffuse serous secondary labyrinthitis, (3) diffuse purulent manifest labyrinthitis, and (4) diffuse purulent latent labyrinthitis, should not be adopted if you wish to do it; but I do insist, since they all arise from a suppurative otitis, that you will be unable to differentiate between the diffuse secondary and the diffuse purulent manifest labyrinthitis in the majority of cases, except by time and the outcome regarding function; and that, having made this distinction, even on that evidence, you may often still be wrong.

Dr. John B. Rae read a very excellent paper on "The Diagnosis of Inflammatory Diseases of the Labyrinth," before the Medical Society of the State of New York at Saratoga Springs, May 16, 1916, in which he simplified the classification into: (1) acute diffuse labyrinthitis; (2) chronic diffuse labyrinthitis; (3) para-labyrinthitis,—(a) with fistula; (b) without demonstrable fistula. To my mind, this covers the ground quite sufficiently, and includes all the cases under the more confusing classification first mentioned. If it were to be put to a vote, I might offer the amendment that the conditions be called: (1) acute endo-labyrinthitis; (2) chronic endo-labyrinthitis; (3) para-labyrinthitis,—(a) with fistula; and (b) without demonstrable fistula,—but I am not at all sure that the amendment might very justly be voted down in favor of the original proposition.

PARAVERTEBRAL ANESTHESIA.

By FRANK C. W. KONRAD, M.D., BOSTON.

THE application of conduction anesthesia to blocking of the spinal nerves at their points of exit through the intervertebral foramina was first used by Sellheim in 1905, and termed by him "paravertebral anesthesia." The more or less imperfect results obtained by him were most likely due to the high degree of toxicity of the drugs, especially of the cocaine, which were used, and which made it difficult or impossible to distribute over a sufficiently large area a sufficient quantity of the drug, and still keep within the bounds of a safe total dosage. Also, he attempted to make the injections as near as possible to the intervertebral foramina, and therefore it is conceivable that some of the drug entered the peridural space by diffusion, or even the dural space by direct puncture of the needle, thus increasing the toxic effect of the drug. Later Braun blocked the sacral nerves along their course in the hollow of the sacrum, and called this procedure "parasacral anesthesia." Numerous other investigators have applied the

conduction anesthesia more or less extensively, but nowhere has it found such general application as at the University Frauenklinik of Freiburg, Germany, of which Geh. Prof. Dr. Kroenig is director.

My experience with paravertebral anesthesia covers the work done at the Freiburg clinic from June 1, 1914, till Oct. 1, 1915, during which time I was assistant there. I have since then received a report from Dr. Siegel, first assistant at the clinic, covering the work to December, 1915, and including 770 cases.

I am indebted to Dr. Kroenig for the kind permission to use his paper,¹ and to Dr. Siegel for his latest report.² I shall use the term "paravertebral anesthesia" as it is used in the Freiburg clinic, to include "parasacral anesthesia." As the technic of this anesthesia is fully described in Dr. Kroenig's paper, I shall not again review it here, but wish to add a few notes on cases that I have done since my return from Germany, including some of the later observations from the Freiburg clinic as well.

Through the kindness of Dr. N. R. Mason, first assistant visiting surgeon to the Boston City Hospital on the gynecological staff, I was given opportunity to make my first public demonstration of paravertebral anesthesia in this country.

A multiparous woman 37 years of age, had come to the hospital for treatment of extensive lacerations of the perineum and prolapse of the uterus, but owing to a daily elevation of temperature from 99 to 101°, operation was postponed. There was an obvious tubercular process involving both lungs, and, as this did not readily improve under treatment in the wards, she was about to be discharged as inoperable on account of it. At this time the advisability of operating under paravertebral anesthesia was considered and finally decided upon.

An extensive perineal repair, followed by a ventral suspension of the uterus and appendectomy were done. Only at one point during the course of the operation did the patient evidence any sign of pain, and that was at the time of packing back the intestines with a Weston strip. At this point the patient was given a whiff of ether, but after operation remembered neither the pain nor the ether. The rest of the operation was completed without further mishap. There were no apparent after-effects of the anesthesia. The patient was allowed to drink water on the operating table during the course of the operation, and immediately afterward. During the afternoon she was given chicken broth, and in the evening a light supper, going onto a light house diet on the day after operation. On the afternoon of the day after operation the patient's temperature rose to 101.4°, but after that fell gradually to 98.2° on the fifth day after operation, and did not again rise above 98.6°. She was discharged, relieved,

fourteen days after operation. Her stay in the hospital had a decidedly beneficent effect on her tubercular condition, as evidenced by the temperature, despite the operation.

Another case from the gynecological service of the Boston City Hospital, and operated by Dr. Mason, was a young woman 23 years old, and pregnant in the seventh month. On entry she was weak from loss of blood, cachectic, and had a hemoglobin index of 55%. Examination showed an extensive cauliflower growth on the cervix, which was proven to be carcinoma by microscopical examination. She was operated on in two stages, the first being a Caesarean section, followed by a cauterization of the cervix by Dr. Robert M. Green, and second, a complete hysterectomy by Dr. Mason, preceded by a cauterization of the cervix by Dr. J. T. Williams. Both operations were performed under paravertebral anesthesia; the complete hysterectomy twenty-two days after the Caesarean section. Her convalescence was somewhat stormy, being complicated by sepsis, but she could be discharged relieved fifty-one days after the first operation.

Hereupon followed eight successive cases which were operated upon by Dr. A. R. Kimpton. Ether was contraindicated in all of these, and four of them were considered poor operative risks under any form of anesthesia. Among the complications were: a severe hyperthyreosis, myocardial weakness, chronic nephritis, hysteria, and one case of obscure bronzing of the skin. In the latter case the gall-bladder was palpated and nothing abnormal found. Also a case of enormous ovarian tumor, with extreme emaciation, and edema of the lower extremities. All cases were successfully operated by Dr. Kimpton, and in all but one the paravertebral anesthesia sufficed to give complete relaxation of the muscles involved, and a complete freedom from pain. In the one case the operation had to be completed under ether because the operation necessary proved to be more extensive than was provided for in the anesthesia.

I wish to mention finally a case of diabetic gangrene of the foot. Amputation of the leg was advised, but the patient did not consent to operation until forty days later. At this time he was running a slightly septic temperature. The leg was amputated above the knee by Dr. F. J. Donoghue. The anesthesia was a perfect success.

These cases are mentioned in particular because of their phenomenal success in view of the fact that ether particularly, and inhalation narcotics in general were contraindicated, and that all were considered poor operative risks under any form of anesthesia.

The following is a list of the operations for which I have administered paravertebral anesthesia.

Caesarean section	1
Forceps delivery	27
Dilatation and curettage	5
Primary perineal repair	10
Craniotomy	4
To relieve pain of labor	1
Colpoperineorrhaphy	1
Ventral suspension of the uterus	2
Resection of both ovaries	1
Complete hysterectomy	2
Supracervical hysterectomy	2
Appendectomy	5
Cauterization of the cervix	1
Suprapubic cystostomy	1
Thyroidectomy	2
Excision of the breast	1
Amputation of the leg above the knee	1

These constitute a series of fifty cases, thirteen of which were operated by other operators than myself.

Additional ether was used in five cases: twice because the patients evidenced signs of pain, but remembered neither the pain nor the ether afterward; once because the final skin suturing was not completed until three hours and ten minutes after the paravertebral injections had been made, and the anesthesia was beginning to wear off; once because the operation had to be more extensive than was planned for in the anesthetization; and once because the patient seemed to possess a certain immunity to all the drugs administered by perineural and subcutaneous injection. Only this last case should be considered a true failure of the anesthesia itself, as the others were due to an error in application or to an overestimation of the signs of pain as exhibited by the patient during the operation. Even in this case, however, a dilatation and curettage was done without the patient being aware of it, though she recognized conversation in subdued tones. However, the amount of ether required in all of these cases was infinitely small, as compared to the amount that would have been necessary in the absence of paravertebral anesthesia.

It is well to note here that especially in laparotomies, where organs and tissues are pulled upon so as to affect areas beyond the field of anesthetization, the patient will evidence signs of pain. This is especially true when packing back the intestines with gauze. These pains, however, are of a dull character and are, as a rule, not remembered after the operation, if the patient had twilight sleep preceding the anesthesia. Also, our long experience with inhalation narcotics and consequent complete anesthesia and unconsciousness has permitted a degree of carelessness in the handling of tissues, which experience with paravertebral or local anesthesia and its associated consciousness, or semi-consciousness, will teach us to avoid more and more, to the ultimate benefit of the patient, and also to a reduction of the number of imperfect anesthetics under this method.

Preceding the anesthesia with some form of semi-narcosis, as, for instance, twilight sleep, is essential in most cases, and advantageous in all

cases of major operations. I prefer to give ten grains of veronal on the evening before operation, and early the next morning two successive doses of scopolamin 0.0003 G. and narcophin 0.03 G. $2\frac{1}{4}$ and $1\frac{1}{2}$ hours, respectively, before beginning the operation. With care in giving the first subcutaneous injection in the morning, the patient may not even be awakened, and thus remember nothing of the preliminary preparations to the operation from the night before until some time after the operation, when he is again comfortably lying in bed. Occasionally it may be necessary to give one-half the above dose of scopolamin and narcophin immediately before beginning the paravertebral injections, and again during the course of the operation if it is desirable to keep the patient asleep and unaware of the operation.

The first case mentioned above, in which the patient, after showing a daily elevation of temperature for three weeks preceding the operation and running a perfectly normal course after the fifth day, suggests a beneficial effect of paravertebral anesthesia, combined with scopolamin and narcophin, on a pre-existing infection concomitant with or due to the condition for which the operation is performed. I have repeatedly observed it, especially in cases with infections of the upper air passages. Is it because these conditions are not aggravated by the paravertebral anesthetics, as, for instance, by ether inhalation, and relieved by the rest necessitated by the operation? Or is there a direct antiseptic action of the fluid injected? Or is it due to the elimination of all the emotional stress that would precede the operation if the preliminary seminarcosis were omitted? Crile's demonstration³—that emotion has the same deleterious effects on the brain, suprarenals and the liver, as an infection has—seems to indicate that our last assumption is correct. However, it must also be remembered that in infections of the upper air passages there is no irritation and consequent aggravation of these by paravertebral anesthesia, as there would be by ether or some of the other inhalation narcotics.

My observations do not differ materially from those of Kroenig and Siegel, and the latest report from Dr. Siegel of the Freiburg clinic shows no material changes in the technic or indications for paravertebral anesthesia. As our experience with its technic and its adaptability to various patients increases, so does also its field of application increase. Important points to note are: the psychic status of the patient, and dealing with it according to need; care in anesthetizing all of the nerves likely to enter into the innervation of the field of operation, anesthetizing too much rather than too little; and finally a greater amount of care in handling the tissues than we are accustomed to in other forms of general anesthesia.

The plasticity of its application and nicety of its confinement to just the necessary field gives to paravertebral anesthesia an unqualified ad-

vantage over spinal and sacral anesthesia, and eliminates the dangers and uncertainties of these. The freedom of the field of operation from infiltration of any foreign fluid gives it preference over local infiltration anesthesia. The convalescence is hastened by the fact that the patient is able to take and retain fluids and nourishment immediately after operation. Thus his energies are spared during the operation by the elimination of shock, and restored by his ability to continue his nourishment practically without interruption.

An objection is found by some operators in the waste of time with this form of anesthesia. This does apply if the operator himself wishes to administer the anesthetic, which would be impossible with ether. However, in a series of cases to be done at once, three or four patients may be anesthetized and then operated on in quick succession, for the anesthesia lasts from two to three and one-half hours, and sometimes even for a longer time. But if the anesthetic is administered by an anesthetist, there need be no loss of time, as the patient can be prepared and ready for the incision at any time designated by the operator. In larger clinics a rotation of cases is accomplished with greater facility than with ether, for, the patient once anesthetized, does no longer require the attention of the anesthetist, but can be watched by a nurse. In fact, it is always well at the operation to have a nurse stand by the patient, to speak encouragingly and to divert the patient's thoughts from the operation whenever this seems necessary.

The semi-narcosis may be continued after the operation to tide the patient over possible immediate pains following the operation. In fact there are so many points of adaptation in this form of anesthesia as to make it the anesthesia of choice for any operation, major or minor, except as an emergency where immediate anesthesia is required.

As to dosage, the same principles as described in Dr. Kroenig's paper hold true. In one case I have even exceeded 600 cc. of a one-half percent. solution by 20 cc., making the total dose of novocain 3.1 grams, without causing any untoward effects.

REFERENCES.

- ¹ Kroenig and Siegel: Shockless surgery with the aid of paravertebral anesthesia and scopolamin and narcophine. Surg., Gynec. and Obstet., Chicago, 1916, pp. 524-533.
- ² Siegel: Ergebnisse bei weiteren 600 paravertebralen Anästhesien. Deutsch. med. Woch., Berlin, 1914, No. 28.
- ³ Crile, G. W.: An experimental research into the nature of nitrous oxide and ether anesthesia. Jour. A. M. A., 1916, lxxvii, 1830, 1831.

MEASLES IN SAN JUAN.—Report from San Juan, P. R., on February 16, states that a severe epidemic of measles is prevalent in that city, where there have already been 1700 cases and several deaths.

Clinical Department.

A LARGE OVARIAN TUMOR.

BY FRANK A. PEMBERTON, M.D., BOSTON.

THIS case is reported because it is so unusual to find such a large cyst now-a-days.

Cora S. Age 67. Married 45 years. Widow for last 2 years.

Children: 1—38 years ago. Miscarriages 0.

F. H., neg. P. H., neg.

Menopause 22 years ago; no flow since.

P. I. Patient states that she has noticed a constant increase in the size of her abdomen for 7 years, which has been more rapid in the last 2 years. A feeling of weight in her abdomen and frequency of micturition are her only symptoms. She has noticed a mass protruding from her vagina for several months.

P. E. Showed the condition seen in the photographs. Her abdomen was tense, dull to percussion except at the top, and a fluid wave was easily felt on tapping. The tumor was smooth, of the same consistency throughout. She has very little subcutaneous fat and weighed 153.5 pounds.

VAGINAL EXAMINATION SHOWED A PROCIDENTIA.

Her occupation is that of attendant to an invalid and she has not been discommoded to an uncomfortable degree until lately. She has always been able to take care of herself hygienically, and to dress and undress, even to putting on and removing her shoes and stockings. She is bright and happy mentally and does not show the drawn, rather haggard countenance that one associates with large ovarian tumors.

ENTERED FREE HOSPITAL FOR WOMEN JUNE 12, 1916.

Operation June 15, 1916. Ether anaesthesia. A short median incision was made through an abdominal wall only half an inch thick. Examination showed many adhesions between the upper half of the cyst and the abdominal wall which could not be separated owing to the tension. The cyst was accordingly tapped without spilling into the abdominal cavity and 34 pints of cloudy, brown, pseudomucinous fluid removed. This left the cyst in a state of flabbiness which rendered the cutting of the adhesions easy. The incision was enlarged to within a few inches of the pubes and ensiform so that the adhesions in the flanks could be reached; and in order to resect the abdominal wall. No adhesions were found to the intestines, which were crowded up and behind the tumor, and this may account for the lack of pain as a symptom. The cyst was found to have developed from the left ovary, receiving its blood supply through a pedicle four inches broad and one inch thick. This was tied and the cyst removed. The right ovary and uterus were atrophied. A hysterectomy was not done because it was not necessary but the uterus was sutured to the abdominal wall to relieve the procidentia. An area of tissue comprising the whole thickness of the abdominal wall, about 5 inches wide at the middle, was excised on each side of the incision, and the peritoneum, fascia, and skin sutured in separate layers.

The operation took 45 minutes, a good deal of time being required to sew up. The patient had no

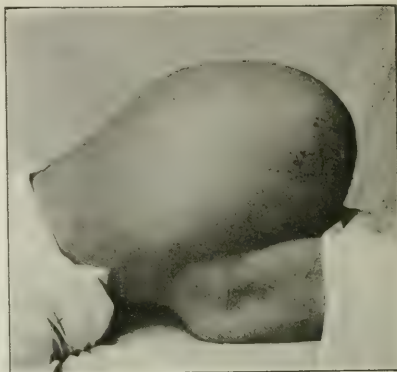


FIG. 1.

shock, which corresponds with our experience in removing large cysts and fibroids. The operation does not cause shock unless a good deal of blood is lost or extensive adhesions have to be separated.

She had a normal convalescence. When she got out of bed and started to walk she had trouble in keeping her balance for a day or two but had no more inclination to fall over backward than sideways or forward. She was out of bed on June 26 and went home July 5. Examination showed a contracted abdominal wall covered with redundant skin, and her vagina was well held up.

The tumor and its contents weighed 72 pounds. Pathologically it was a unilocular pseudomucinous cyst adenoma lined by a single layer of high cylindrical cells and showing no papillary hypertrophies growing from the epithelium.

This is the type of ovarian cyst which is most likely to reach a large size. The wall consists of connective tissue with a few smooth muscle fibres scattered through it, lined on the inside

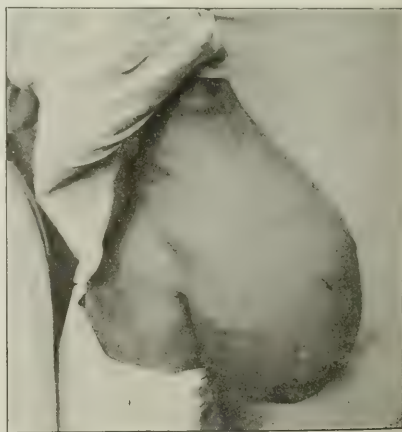


FIG. 2.

by a single layer of high cylindrical cells. Papillary formation is not so common as in the serous cyst adenomas. They are usually multilocular and frequently show the remains of septa where two cysts have coalesced. Their contents consist of serum, pseudomucin secreted by the epithelial cells, cholesterol crystals, blood, and degenerated epithelium. They show carcinomatous degeneration in only 1.5%; 88% of these cysts are one sided.

Implantation metastases may occur on the escape of cyst contents into the abdominal cavity usually either by rupture of the cyst or escape of fluid during tapping, but such metastases are not nearly as likely to occur with this type as with serous cyst adenomata. If they do occur, they eventually involve the whole peritoneum and the abdomen is filled with pseudomucinous fluid. For this reason it is always best not to tap an ovarian cyst, but to remove it intact. An added and stronger reason is that the exact pathology of a cyst of the ovary cannot be made out by external examination, so it is wise always to treat them with respect. With such large cysts, however, tapping is pardonable, because they are not malignant, metastases are unlikely to occur, and the increased difficulty and danger of removing them intact outweigh the other considerations.

We have found reports of three larger cysts which have been successfully removed and doubtless there are others. Kelly reported one weighing 100 pounds. Macpie reported one weighing 86¼ pounds removed from a woman 42 years old, and Black reported one weighing 85 pounds removed from a woman 57 years old.

REFERENCES.

- South, M. J., 1915, viii, 786.
 Am. J. Obst., N. Y., 1914, lxix, 125.
 Charlotte (N. C.), M. J., 1915, lxxii, 292.
 Brit. M. J., 1913, I, 117.
 Surg., Gynec. and Obst., 1913, xvii, 41-51 and 576-579.
 Kelly: Operative Gynecology.
 Veit: Handbuch.
 Winter: Gynaecologie
 Küstner.

A CASE OF ASPERMIA.

BY SEELYE W. LITTLE, M.D., ROCHESTER, N. Y.

THIS case is reported because it shows the possibility of successful treatment based upon what a few years ago was totally unknown and at present is known only fragmentarily and in a general way—the function of the ductless glands.

E. B., school teacher, age 32, married six years, no children.

Being very intelligent, and greatly desiring to have children, he consulted a very competent specialist in genito-urinary disorders. This physician could find absolutely nothing to account for the aspermia which was present. Repeated examinations of condom specimens over a period of several months failed to reveal a single spermatozoon. A

vas deferens was finally tapped near the epididymis and a sample of testicular secretion for examination was obtained. This too contained no spermatozoa. Gonorrhea, syphilis and exposure to x-ray could be absolutely ruled out. Sexual feeling and coitus normal. Patient sent to writer with a view to possible ductless gland therapy. Family and personal history irrelevant except possibly the fact that patient resembles mother, whose mother died of an ovarian "tumor."

Patient a man of average size and build. Very well balanced mentally. Skin, normal. Hair, normal on head but very abundant on arms, legs, chest, abdomen and pubes. Heart and lungs, normal. Urine, normal. Teeth, doubtful. Gums, tender and bleed easily. Appetite good. Bowels, tendency to constipation. Sleep normal. Penis very large for size of man. Testicles large.

From the data it would appear that the man is on the whole about an average male. By a process of exclusion it was decided that the cells from which spermatozoa develop were probably present but dormant. We know that some of the ductless glands have a great influence on the growth and development of the generative apparatus. These glands are especially the thyroid, the pituitary and the suprarenal cortex. Furthermore in this case if the fault lay in any of the ductless glands, obviously it must be a case of hypo-function.

There were no symptoms of hypo-thyroidism, such as myxoedema, even in slight degree. The pituitary was ruled out also for lack of symptoms such as polyuria, drowsiness, lack of ambition, obesity, low blood pressure and the like. On the other hand two facts pointed to a former hyper-action of the suprarenal cortex—the body hairiness and large size of the external genitalia. Hyper-action of any organ implies eventual hypo-action of that organ. Accordingly we acted upon the theory that this patient for an indefinite time, probably from some time after puberty, had had a condition of cortical hypo-suprarenalism.

He was given 4 grains of dried suprarenal cortex daily, increasing to 6 grains daily. Treatment was begun on Sept. 23rd. On Nov. 25th a few perfectly formed spermatozoa were found in a condom specimen. The finding was confirmed by Dr. M. L. Casey, pathologist to St. Mary's and the General Hospital.

A CASE OF CONGENITAL DISLOCATION OF THE SHOULDER JOINT.

BY FRANK E. PECKHAM, M.D., PROVIDENCE, R. I.

IN the *Archives of Pediatrics*, Vol. XXI, No. 9, July and September, 1904, I reported two cases of congenital dislocation of the shoulder joint. One of these cases was aged eleven months and the other twenty-two months, and the conclusions as given at that time will be reproduced, i.e., "As far as can be seen, the results are about alike in the two cases, and why there should be inability to elevate the arm is not evident. Phelps advised putting the arm up straight at the first dressing, thinking thereby to secure motion in this direction. In Case 1,



FIG. 1.

CONGENITAL DISLOCATION OF THE SHOULDER JOINT, NOVEMBER, 1914.

there was positively nothing done that could not have been done without cutting, and in another case at so young an age, I should feel like reducing without a cutting operation, and bandaging the arm in the same position as above for two or three months."

This made very interesting reading when Case No. 3 appeared in November, 1914. E. W., a girl aged seventeen years, presented herself with an arm hanging helpless and with motion much limited and abduction impossible. Fig. 1

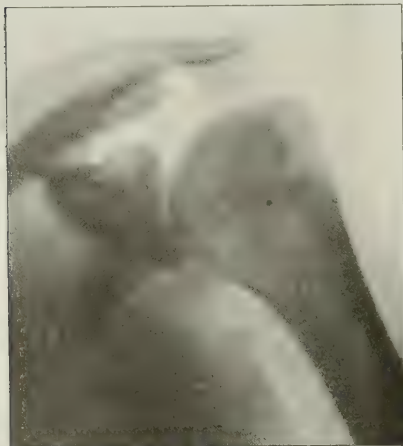


FIG. 2.

SHOWING SHOULDER IN PLACE, JUNE, 1915.



FIG. 3.

SHOWING POWER OF ABDUCTION ABOUT ONE YEAR AFTER REDUCTION.

shows the condition at that time. Under ether, the dislocation was reduced by manipulations and held in position by means of many strips of adhesive plaster. It was kept in place for about six months, when strapping was omitted.

Fig. 2 shows the shoulder in place in June, 1916. The arm was freely movable in all directions. Fig. 3 shows the ability to abduct about one year after the reduction.

A CASE REPORT.

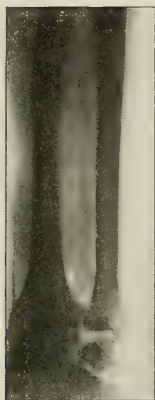
BY ALLEN H. BLAKE, M.D., WEST SOMERVILLE, MASS.

A PATIENT, referred to me for x-ray examination by Dr. H. F. Curtis, showed on the plate not only the expected fracture of the radius, but also the sclerosed artery. Further investigation resulted in the following history:

B. L., 56 years of age, hack driver. Family history of no importance.

Previous History. "Pneumonia" four times. Denies venereal disease. Has five living children. Three died in the early months. Wife had one miscarriage,—in the first pregnancy. Tobacco plus, and alcohol in marked excess. There are no marked symptoms of his condition.

Physical Examination. Heart apex in the fifth space and in the nipple line. Soft systolic murmur at the apex. Lungs negative. Liver moderately en-



larged. Urine negative. Blood pressure: diastolic 82, systolic 136. Further roentgenological examination showed equally clearly, sclerosed arteries in other parts. The shadow of the aortic arch was slightly broadened.

Therapeutic and Preventive Medicine.

TREATMENT OF PAIN AND DISTRESS IN DIGESTIVE DISORDERS.

By A. EVERETT AUSTIN, M.D., BOSTON.

Assistant Professor of Clinical Medicine, Tufts College Medical School; Acting Chief of the Medical Clinic, Boston Dispensary, and Physician to Berkeley Infirmary.

As viewed by the laity who are afflicted with digestive disorders, the most distressing symptom is the pain or discomfort which they suffer after taking food. This is often so troublesome that regarding food as the source of all the ills which they experience, they often avoid it, with disastrous results to their general well-being, or restrict themselves to malted milk, gruel, beef tea and other liquid rations which produce the same effect as starvation, a woeful condition of malnutrition.

From a long experience with these tales of woe, it has been found that it is often almost impossible to learn definitely, whether they actually have pain or only discomfort, because the latter is exaggerated in the minds of many to a very conscious counterfeit of pain, even if that does not exist. Sometimes we can obtain a definite knowledge by asking the patient its relative intensity as compared with pains to which we are all at times subject, such as toothache, earache, colic, etc. If the pain is said to occur after every meal, whether liquid or solid, simple or made up of different articles of food, we may

be assured that discomfort is referred to and not pain, because the laws of the latter with reference to the time when food is taken and its character are fairly well established. Then, too, if pain is followed by vomiting, we may usually be assured that it is the real thing, because the distress after food is rarely of such intensity that emesis follows. Pain, too, which is reflected to the back, upper chest and shoulder blades, originating above the navel, is apt to be genuine, as discomfort following food rarely pursues this course, but is confined pretty closely to the region in which it originates. An exception to this, however, is cardio-spasm which is often so intense that it streams to the left shoulder and often resembles an angina, for which the term pseudo-angina is employed, but yet can often be allayed by some carminative and is usually followed by free eructations of gas. The pain of pyloric spasm, which is not necessarily the outcome of organic changes is also genuine but occurs periodically and usually long after food is taken, particularly in the early morning hours. In marked distinction from the discomfort after food, this pain is usually relieved by a glass of milk or an egg, instead of being exaggerated.

The pain of gastric and duodenal ulcer, however, is generally clearly defined, varying largely with the time of onset after food is taken and with the effect upon the same of the food itself, since it is well known that any nutriment exaggerates the former and temporarily alleviates the latter. Furthermore, both, according to my experience, are periodic or seasonal in their character, with long periods of comparative comfort or at least, only gastric discomfort. Gall-bladder infection is very erratic, producing either acute and most excruciating pain or simply digestive discomfort accompanied by eructations. Gastric cancer is usually accompanied by suffering only when attacking the pylorus and then, as stated by R. Schmidt, only during the period when free hydrochloric acid is secreted. After the peptic cells are destroyed by the progress of the disease or by the associated gastric catarrh, pain ceases. When, however, with any of these affections, perigastric adhesions are formed, there is generally discomfort and with overdistention of the stomach, acute pain. These adhesions must play a much larger part in the accompanying suffering than is generally supposed since it is well known that fatal perforation of the stomach, duodenum or gall-bladder, without previous adhesions, may occur, when there has preceded only mild digestive discomfort. When, as patients declare, discomfort exists all the time except during sleep, in the epigastric region without any exaggeration or alleviation by taking food, the conclusion is usually justified that the patient has a ptosis of the stomach or possibly of all of the abdominal organs. Very little light can be obtained from the patient's description of the pain in many instances, since a variation of terms such as "stabbing," "tearing," "burning" and "like fire," as some

declare and "as if the organ was seized with red-hot pincers" are employed by the possessor; graphic, though not always intelligible to the listener.

Many explanations of the production of this pain are given but they are applicable only in few instances. The theory that violent peristalsis is a causative agency is hardly probable, since it is sometimes possible to observe marked peristaltic waves passing across the abdomen accompanied by temporary rigidity by which the stomach is seen to be forced above the level of the abdominal wall, yet the patient is entirely unaware as far as sensation is concerned, of this activity. Then, too, one can often see under the fluoroscopic screen, contractions of the stomach of such intensity that apparently the lumen is entirely obliterated and yet, patients are entirely unconscious of them and are frequently talking unconcernedly with the observer. On the contrary, when adhesions can be made out, as they sometimes can, then these waves are found to be painful.

Again, hypersensitiveness of the gastric walls, when in contact with each other during fasting, is sometimes offered as an explanation, but very frequently these same individuals have their discomfort increased by simply drinking a glass of cold water, which, if it had any action, would separate the walls. Overdistention of the stomach, when no adhesions are present, is equally valueless as an interpretation of the causation of pain, because these same patients on a vacation, or at a dinner with good company, declare that no discomfort occurs though they may have eaten much more than at home during their usual routine. Mere spasm of the cardia or pyloric orifices is also of doubtful value, though possibly the peristaltic action of the stomach against these temporarily imposed barriers may cause pain; the latter statement has more in favor of it because the urinary bladder, when obstruction exists in the urethra, may produce severe pain by these spasmodic contractions.

The treatment of cardio-spasm, naturally, divides itself into two parts; first, when functional, prevention, which comprises the following suggestions: The patient must avoid rapid eating and particularly drinking, because of the great risk of causing an attack when much air is introduced into the stomach. An excellent plan to follow in taking fluids has been found to be the use of a tablespoon, by which, necessarily, only a small portion enters the esophagus at one time. Many suggestions can be offered also with the purport to stop the wolfing or bolting of food; laying down the knife and fork after every mouthful will tend to check this haste and cause better mastication, while a watch laid before the individual will soon convince him of the rapidity with which he is devouring his food. No iced drinks nor foods should be taken, since these, too, tend to bring on an attack of the spasmodic closure of the cardia.

All efforts to overcome the spasm by eructations must be avoided, since usually more air is introduced into the esophagus than escapes. Constipation must be controlled, as apparently, by reflex activity, it predisposes toward such spasm. Smoking and aerated drinks are also known to encourage these attacks and consequently must be given up.

During an acute attack, the suffering varies from mild pain which the patient usually localizes in the precordial area and considers due to a heart attack, sometimes termed pseudo-angina, to a most incessant suffering, reminding one, often, of an attack of gallstone colic. For the severer attacks, nothing works with the rapidity and efficacy of the hypodermic injection of morphine, since our only object is to relax the spasm. Less severe attacks can usually be overcome by means of the carminatives, such as a half teaspoonful of equal parts of spirits of chloroform and compound tincture of cardamom or the latter with aromatic spirits of ammonia, given in hot water, either sipped or taken with a tablespoon. The old and well-established remedy, Jamaica ginger, taken in hot water, will usually relax the milder forms of this spasm. Where the patient's pocket-book permits, validol or menthyl valerianate serves the purpose admirably.

On the contrary, when this spasm is the outcome of an ulcer situated at or near the cardia, the patient should be subjected to a regular ulcer diet, as originated by Lenhartz and modified by as many practitioners as have ever used it. Where the attacks are of functional character, the choice of food has seemed to me of very little importance, provided the suggestions made above are followed; but when actually due to ulcer, a most rigid selection of bland, non-irritating food must be made to check possible irritation.

The management of distress after food is taken, usually arising from gastric myasthenia, is one of the most trying problems presented to the physician. As this apparently arises from any distention of the stomach, our object is to provide the patient with sufficient nourishment and to render his discomfort during the period of its digestion as little as possible. To do this, we must advise small, frequent meals with little or no fluid; hence, soups and large quantities of milk are absolutely inadvisable, and the food should always be taken dry. Fluids may be taken, of course, but in the intervals between meals so as to avoid overdistention. Moreover, the more finely divided the food may be, the more readily it leaves the stomach and the less the period of discomfort. Fats, too, are known to delay the motility of the stomach or, at least, leave it very slowly so that, outside of cream and butter, they should be eliminated from the diet. Patients, too, from their personal sensations, declare that meat also causes them much more discomfort than any other form of food, and the more extensive employment of eggs, soft

cheese and gelatine to supply the protein deficit should be advised. Our efforts should be directed to lessen the discomfort as much as possible and to increase the gastric motility. The former can be accomplished frequently by the use of bromides, which may be employed in gram doses after the food is taken, or in the employment of anesthesin, which, while not sufficiently active to delay acute pain, does relieve very much the patient's discomfort when taken in doses of 0.3 gram after the meal. Anesthesin is also prepared in the form of bon-bons which make a very desirable vehicle for its use.

Pyloric spasm with late post-cecal or early morning pain can be alleviated or controlled both by dietetic and medicinal means. The former consists largely of the total avoidance of coffee or condiments as well as alcohol on an empty stomach. As this condition is frequently accompanied and possibly caused by hypersecretion, though the evidence of the latter is not positive, we should also advise patients to have in their possession, some of the heavier alkalies, like bismuth or magnesia; the former to be employed if there is a tendency to diarrhea, and the latter if the patient is prone to constipation. These substances are rather disagreeable to take and in my own experience, the preparations, known respectively as "Milk of Bismuth" and "Milk of Magnesia," are the most palatable and readily taken. Their only disadvantage is that the amount of material in suspension is small, not exceeding five grains per teaspoonful.

The oils also prove efficacious when taken during the attack or sometimes before the meal, and sweet oil furnishes, perhaps, the most satisfactory of these, though liquid petroleum in tablespoonful doses is very effective in checking the spasm as well as having a mild laxative action. Usually, however, we are compelled to resort to certain drugs to overcome this spasmodic action or "cramp" as the patients term it, and nothing better has been found than atropine sulphate in 1 mgm. doses three times a day, taken after the food. On account of the unfortunate susceptibility of some individuals to this medicament, by which the throat becomes dry and the pupils dilated, interfering with the vision, one must inform the patient of these peculiarities or else much alarm is aroused. To overcome this, we may employ methyl atropine nitrate or eumydrin, its trade name, in doses slightly larger than those of atropine itself but never exceeding 2 mgm., three times a day.

Recently, Zweig has recommended very highly the use of papaverin in doses of 0.03 gram a half hour before meals. This has been found to be vastly superior to codeine and does not possess any of the unfortunate characteristics of either morphine or opium.

The treatment of adhesions has proved one of the most obstinate in my experience. The opening of the abdomen and the separation of such

does not offer any guarantee whatever that they will not re-form. As a fact, they very frequently, if not almost invariably, do this, and the latter condition of the patient is even worse than the former. The only drug which has ever been recommended with any certainty of success for this purpose is thiosinamine sodio-salicylate or fibrolysin, which is prepared in ampoules ready for subcutaneous injection and can be introduced one ampoule daily, into the muscular tissue by a hypodermic syringe, with some hope of success. My limited experience with this remedy, however, does not furnish sufficient encouragement to continue its use in all cases. In superficial lesions, it is unquestionably valuable; but when after a suppurating appendicitis, we have been compelled to employ drainage, the adhesions are so dense and so extensive that this treatment offers but little hope. Then, too, with adhesions following gall-bladder drainage, this form of treatment is practically useless; with ulcers of the stomach producing adhesions it offers greater hope of success, but one must not rely upon it with too implicit confidence. What, then, shall be done for these unfortunate who come back to us after operations which may have saved their lives but whose pain and discomfort render life unendurable? While as yet, my experience is not sufficiently extensive to claim extraordinary merits for massage, it has been found that this offers a greater amount of improvement than any other means of treatment. This, of course, can be applied only where the site of the lesion can be reached, as after appendectomy, cholecystostomy and operations for duodenal and pyloric ulcers. It goes without saying, that the massage must not cause pain—in other words, that no inflammatory condition can be present about the site of the adhesion. When the adhesion is associated with the stomach, great caution must be employed that the patient never partake of more than an ordinary volume of food which may, of course, be repeated as often as desirable to maintain his nutrition.

Some very troublesome and annoying instances of adhesions in and about the hepatic flexure of the colon have come to my attention. These do not produce the sharp attacks of pain caused by those of the stomach and cecum, but are a constant source of discomfort, which seem little influenced by food but which are distinctly aggravated by constipation. They have always been verified by x-ray examination which clearly shows the slowing of the fecal current at this point, though no obstruction is present.

Naturally, the diet must include a large amount of fruit and fruit juices, coarse breads, green vegetables, honey, molasses and milk sugar. Still further to liquefy and render bland the fecal contents, liquid petroleum has been used to great advantage to dull this grinding pain, as patients describe it. Veronal or veronal sodium once or twice a day has proved very effective.

Nor have I ever seen a habit established when the drug is used for this purpose because it is always possible to withdraw it on every second or third week and still have the patient enjoy a fair share of comfort. Unless this withdrawal at the stated intervals takes place, patients sometimes complain of a temporary lack of co-ordination of the limbs by which they have a tendency to stagger.

The pains accompanying gastropnoxis or splachnnoptosis, usually exaggerated toward evening and disappearing during rest in bed, are but little relieved by any means of medicinal treatment. The proper application, however, of the Rose straps, consisting of bands of adhesive applied diagonally across the abdomen with a lifting motion from Poupart's ligament to the spine, with an additional horizontal strip under the navel extending backward, gives almost immediate relief when this condition is acquired, as so frequently occurs after numerous confinements or abdominal operations. It is our custom to allow these straps to be worn for one week, after which, when relief is obtained, a proper fitting abdominal band is ordered to be worn during the daytime and removed at night. The relief in many cases from these nagging, dragging pains, which are not only experienced in the abdomen but also in the back, is often miraculous.

On the contrary, if this condition of ptosis is congenital, no such relief can be expected and the most satisfactory means of treatment is to place the patient in bed and by means of hypernutrition, endeavor to increase the weight, of which, usually, a portion is due to fat deposit in the abdomen and which acts as a cushion or support. This method was always employed by the late Professor Oser of Vienna at the Rudolph Hirsch Hospital and his opinion was that if this method of treatment could be employed, it was far superior to any form of abdominal support. The later theories by which the congenital form is exaggerated by the faulty posture of the individual are undoubtedly well grounded, and when the patient has passed a period of four weeks of rest in bed with hypernutrition, a correction of this faulty position of the body by means of braces or corsets, such as the orthopedists employ, is often sufficient to overcome this painful sensation of dragging in the abdomen.

The discomfort and occasional moderate colicky pains associated with constipation are to be overcome largely by an anti-constipation diet, accompanied, if possible, by the milder forms of laxative, such as petroleum, cascara, agar agar, phenolphthalein and the milder senna preparations. From experience, we have learned that it is well, at first, to use fairly large quantities of these laxative agencies because small quantities arouse ineffective intestinal peristalsis and frequently exaggerate the pains instead of relieving them. As a general thing, these

peristaltic exciters can be diminished in quantity until, frequently, diet alone will overcome the deficiency. Cold applications to the abdomen in the morning, either by bathing or, better still, by means of the needle spray to the abdomen, not only increase the efficacy of mild laxatives but often prove the only incentive, in addition to diet, which is required.

Memorial Addresses.

WILLIAM PALMER BOLLES.*

I.
SURGEON AND MAN.

BY CHARLES F. WITHINGTON, M.D., BOSTON.

THE qualities which impress us as we recall our departed friends fall into two groups,—the professional and the personal. These, of course, are not altogether separable, because the quality of a man's professionalism is modified by the peculiarities of his mind and character, and, on the other hand, a man's way of thinking and acting—his mental and moral attitude—are inevitably affected by the nature of his daily occupation. A sordid business, "daily contact with the things we loathe," will tarnish any but the brightest soul, and it takes sublimity to keep doing a trivial task and to "make it and the action fine."

The professional quality of Dr. Bolles' work was in many ways ideal. Anything careless or slipshod in his own work or that of others was abhorrent to him. A justifiable pride in neatness and workmanlike procedure possessed him. This was observable, not only in the field of operative surgery, but also in the manufacture of apparatus, in which he showed great skill.

But, what is rather remarkable, this impatience with bungling work did not interfere with his careful advice to and supervision of the work of some young physician whom he knew to be desirous of personally performing some operation with which he was not very familiar. It is much easier to do a thing yourself than to show someone else how to do it; but the latter course may be more helpful to one desirous of gaining facility, and many young men owe that great educational debt to Dr. Bolles. In general, his attitude toward younger doctors was one of support and sympathy. Patients never received from him the slightest word or look capable of carrying criticism of, or aspersions upon, their attending physician.

Another notable quality of the good practitioner was the atmosphere of confidence and trust which his coming brought into the sick-room. I was privileged to observe this on my first introduction to him, at a time previous to

* Read at the Boston Society for Medical Improvement, Nov. 20, 1916.

my entering upon medical study, and it struck me many times in the years that followed. His alert air, his small figure, crowned, in his later years, with a wealth of snowy hair, brought with it into the sick-room an assurance of help which communicated itself not only to patient and friends, but also to the puzzled and perplexed colleague who had asked for his counsel.

Dr. Bolles came of an ancestry that had been prominent in the battle against slavery, and he retained from his early associations a sympathy with the "under dog." Politically, this led him to be an independent, and no party could claim his support for a shuffling policy or a shady candidate. The same qualities that guided his political action, determined his theology. The extinction of his family line in the premature death of his only child, to whose education he had devoted himself with passionate eagerness, could not fail to cast a deep shadow on his descending years. Of this he never spoke, but its chastening effect upon his spirit was ever after, ward evident to his friends. His religion was impatient of dogma and creeds. It was to the form of ecclesiastic authority that he seemed rebellious rather than to the essence of spiritual life. The same hostility to conventional authority, perhaps influenced his attitude toward education. The traditional curriculum of college appeared less effective than personal instruction by an enthusiastic teacher, who might offer the cup of knowledge, not to indifferent lips, but to those in which a real thirst for knowledge had been aroused. This, of course, is true, or would be true if inspired individual teachers were as plentiful as college professors.

Hospitality was a deeply seated instinct with him. He enjoyed the spirit of good fellowship in the medical clubs to which he belonged; he contributed generously, not only to scientific communications, but to the flow of humor and conversation about the board. He never appeared more pleased than when it fell to his lot to act as host. For years it was his habit in the summer season, when work was slackened and many of his neighbors were away, to be at home one night in the week to his medical friends. He called these "meetings of the unemployed," and sent out a general reminder by telephone or by word of mouth to all the doctors who weren't busy, to come. Delightful the memories now of those summer nights on the veranda of his pretty suburban home, the refreshments, the cigar smoke, the cooling drinks, the story, the jest.

One distinguishing and important thing about our friend was his extra-professional industry. He believed that every man should have an avocation as well as a vocation. He would have endorsed Phillips Brooks' words, addressed to business men, but equally applicable to doctors: "I am sure that here I may claim, and you will allow, that for every business man's best road, it is desirable, it is necessary that he should have some intellectual or spiritual sym-

pathy outside his business, which shall be the resource of his life, where he can go for the water of refreshment and life that will keep him from stiffening into a machine. . . some place of mental resort, some interest or study or liberal occupation of some sort to which his tired life may always resort, to find refreshment and recruit its spring. This is the evening element in life. There are multitudes. . . who have turned to drudges and drudged along in a work that was slavery to them, just for the lack of some such resort, some interest outside their business to which they could retire."

Botany was naturally one of his first pursuits, possibly suggested by his lectureship, as a young man, on pharmacology, in the Massachusetts College of Pharmacy, and later in the Harvard Medical School. He retained his intimate knowledge of, and his love for, flowers all his life. He spent much time in his garden, and maintained a keen rivalry with some of his fellow enthusiasts on the perfection of his blooms, on the precocity of his first crocus, or the lingeringness of his last rose of summer.

He was an admirable cabinet-maker and wrought some beautiful specimens of household furniture, such as the mahogany frame of an eight-day clock. He took very artistic photographs, developing and printing them himself. In his later years he acquired some fine lenses, microscopic and telescopic, and plunged with great eagerness into the wonders both of the small and the great. And so, with an ever-growing zeal and curiosity he filled up the full measure of his threescore years and ten.

Hæc studia adolescentiam alunt, senectutem oblectant.

Such pursuits made more of a man of him, and perhaps not less of a surgeon. They represent, I think, a refreshing contrast to the narrow specialization of modern education. The old, broad-minded generation of doctors is disappearing,—the men who knew their classics, their Shakespeare, their literature, the men who stood for culture, for intellectual weight in their communities, as well as being mere doctors of medicine. Now medical pedagogy, if it requires as much as two years of pre-medical college work, insists that those two years include, besides a modern language, zoology, biology, physics, and two courses in chemistry. The man who is to be a navigator knows little of the chemistry and microscopy of a drop of water. The technical man of today is like a stone fort, rising sheer out of the water, with nothing about its base, no green banks, no trees, no flowers, nothing but the grim utility of its defence. A fort, perhaps, may be stripped down to its bare walls, but not a human life. Not long ago I saw a young man, a graduate with credit of our best technical school, who while lounging in a drawing-room, picked up a volume of Goethe and, after rather painfully making out the name, said "Let's see. He was a German, wasn't he?"

For many years there stood in the doctor's office, at his elbow as he wrote, a bust of Voltaire, upon which he liked to discourse. The shrewd, quizzical glance of the eye, the sneer of the lip and the mocking smile of the face amused and fascinated him. It appealed, perhaps, to one side of his own nature, seeing, as one must, the foibles and weaknesses of mankind. But his interest in the bust did not imply that he himself was a mocker at goodness. The crafty and cynical philosopher interested him as one addition to the multiform human types, the *comédie humaine*, which he was himself always studying. It did not mean that he looked out upon the world through those leering eyes. The purely surgical specialist, who sees a patient only for a brief space before and after the operation, may get no deeper vision into that man than the particular anatomical cavity which he explores. But Dr. Bolles was throughout his life also a general practitioner, and in that somewhat outgrown and scorned capacity he had an opportunity to see more of the great drama of human life, its strength as well as its weakness, its triumphs as well as its defeats. If he viewed its unlovely aspects with the eye of the cynic, he yet saw, on the whole, much more to attract his admiration and regard. No man could hold, as Dr. Bolles did, the personal regard and love of so many patients, unless he had himself recognized in most of them some spark of nobility.

He sometimes referred to himself jestingly as the slave of beauty, under which pleasantry he meant, I think, that he seriously worshipped beauty wherever he found it,—that beauty which clothed the flowers of the field that he so greatly loved, the beauty of art and of every skilled handicraft; the beauty of books and of their appropriate clothing; the beauty of the human form divine; of human life and the human soul.

And who of us all shall venture to deny that that great passion is now being fed, to a fuller satisfaction, in some realm of cosmic beauty?

II.

WILLIAM PALMER BOLLES.*

By EDWARD WALDO EMERSON, M.D., CONCORD, MASS.

It is a disappointment to me that I cannot present my memories of a dear and honored friend in informal speech—the more human way—rather than in writing, and that confinement from illness must prevent a better furnished and prepared paper.

I look back through forty-seven years to the daunting first immersion into anatomy by way of the difficult Latin-English of Quain, cleared by the admirable Holmes, and helped out by our first dissecting-room experience. At the afternoon recitation to Dr. C. B. Porter, the dem-

onstrator, I trembled when called up, and retired mortified. But I noticed a small, hectic-looking student who answered the call coolly and recited accurately. His habitual preparedness mortified me, but, looking closely at him, I said to myself, "It is costing that man too much. He won't be alive two years hence." This was William Bolles, but he lived forty-six years more, a helper to others, through a busy life filled with manifold and interesting activities.

It was his second year of medical study, and I supposed him my senior. He soon made friendly advances, and invited me to his room, with one or two others, for mutual quiz. Then it turned out that he was the younger, but a remarkable student, faithful and exact. Learning that some illustrations were desired for a lecture, he drew, on a large scale, and painted with great skill and correctness what had been asked for. The reward for this service was the merest casual mention by the distinguished professor of "these paintings by one of your number—a Mr. Ball, or Bull—I forget the name."

Bolles was born in New London,—the old family home which he loved to visit was nearby in Waterford, Conn.,—and had the eager instinct for natural history, which probably saved him in his delicate youth, when he was not fitted for rough games. He knew all about flowers; was a good botanist all his life. Physics attracted his taste and skilful hand and true eye.

He made good use of the New London schools; did not go to college, but studied under the guidance of his father, whose interest in literature and science seem to have, in his son's case, served quite as well as the curriculum. Hethen, in accordance with general usage for medical students, studied and rode for a year with a local physician.

His father died, and William came to Boston to pursue his studies. Bolles's class took their degrees before the reform in the Harvard Medical School. All students paid for all the lectures for two years. These went on through the autumn, winter and spring. We could attend them in any order, and without guidance—surgery before anatomy, therapeutics before physiology, if we chose. In pathological anatomy the question whether "cheesy masses" or "milliary tubercles" were the real thing was unsettled. Microscopy was just introduced, a sort of elective; and physiology was taught didactically. Asepsis was unthought of in the hospitals, and antiseptics were being gropingly introduced. So Bolles, graduating under the ancient régime, but aiming at hospital and city practice, had to learn all these things as he went along, later.

Bolles's advance is very interesting. Not physically strong, with some weakness in the back while in the Medical School (he worked standing when he must, but studied lying down instead of sitting): without relatives or acquaintance in Boston society; not then striking in ap-

* Read at the Boston Society for Medical Improvement on Nov. 29, 1916.

pearance, and always very plainly clothed, he won general respect among the body of students; he had little chance for an appointment as house officer at the Massachusetts General Hospital, which usually were given then to youths who "came of kenneled folk," but he passed his examination at the City Hospital and won his appointment on the surgical side; on leaving the hospital he took a summer vacation, to recuperate his health, as surgeon on a sailing vessel, studied for one winter in Vienna, and soon after his return, was placed on the surgical outpatient staff at the City Hospital; soon after, he received the appointment of Professor of Materia Medica and Botany at the new Massachusetts College of Pharmacy. He settled in a pleasant and then semi-rural part of Dorchester. Practice began to come in, and his eager mind, and hands of manifold deftness, knew well how to fill the hours. Before long his professional intelligence, fidelity and skill brought to him, still young, the appointment on the active surgical staff of the City Hospital. This position he held with advancing credit for twenty-five years. Retired on the age-limit, he remained a consultant. Happily for his neighbors he remained an admirable general practitioner until within the last few years. This choice, of course, prevented him from advancing to highest rank as a modern surgeon. His was a history of success fairly won by character and brave, cheerful effort.

Dr. Bolles early made a home for his widowed mother and younger brother. After the death of the former, he married Miss Martha B. Sumner, who survives him. The untimely death of their son, an only child, was a grievous blow to them.

But Bolles was not only a doctor. He was a natural craftsman, self-taught, in many directions. He had a work-shop with the best tools and apparatus. There, long before breakfast, he was happily at work. When I began practice, I received a gift of his carved splints of many kinds, of original and excellent device, such as could not be bought; finger and thumb-splints, too, of brass. One day he showed me a set of instruments of precision in minutest weighing and measuring, his own handiwork. He melted silver and fashioned it into artistic shapes. Always a good microscopist, in his later days he bought a telescope and studied the skies with delight. His skill with pencil and paint-brush has been mentioned, but photography, in which he was a master, interested him more than art. His photographs of flowers could hardly be surpassed, and in landscape he had a good sense of composition, yet with regard to old masters and Renaissance painting, it pleased him to play the Philistine. On his first visit to Antwerp and Brussels he wrote to me of a new and unlooked-for interest he had found in the galleries—dermatological. Rubens' rich renderings of *Rubeola*, *Scarlatina*, *Roseola*, *et id omne genus*, in

goddesses, nymphs and warriors, he revelled in, in a highly amusing letter.

At different times, later, he spent three summer vacations in Europe, surely finding more than mere medical interest in art, but he was not of a romantic temperament, and his microscopic eyes wanted more than color-generalizations. Similarly, in his eagerness for nature and science, he found no time for poetry or novels.

The busy years of faithful and successful practice sped by, leaving each its crown of respect and gratitude as his hair silvered. He looked healthier and even younger in his later days. His kindness was overflowing, and "he believed the best of everybody."

Last winter, Dr. Bolles decided to visit California for the first time, his wife accompanying him. They took one of those rose-embowered cottages under the beautifully folded mountains of Santa Barbara. There was really no winter; the paradise of that place was a revelation to them, the flowers and trees all new. They found old friends there, and made new, and the climate favored the excursions afield which he loved. On the 18th of last March, at the end of a happy day out of doors, Dr. Bolles had a sudden heart-attack, and in a few minutes received his release.

I like to end this sketch of William Bolles with our old master's, Dr. Holmes's, answer by the majestic shades of the brave healers of the past as to the rewards of our profession:

"List while they speak:

In life's uneven road

Our willing hands have eased our brother's load;

One forehead smoothed, one pang of torture less,
One peaceful hour a sufferer's couch to bless,

The smile brought back to fever's parching lips,
The light restored to reason in eclipse,

Life's Treasure rescued like a burning brand
Snatched from the dread destroyer's wasteful hand.

Such were our simple records, day by day,

For gains like these we wore our lives away.

In toilsome paths our daily bread we sought.

But bread from Heaven attending angels brought.

Pain was our teacher, speaking to the heart,

Mother of pity, nurse of pitying art:

Our lesson learned, we reached the peaceful shore

Where the pale sufferer asks our aid no more,—

These gracious works our welcome, our reward;

Ye served your brothers; ye have served your

Lord!"

Society Report.

COLLEGE OF PHYSICIANS OF PHILADELPHIA, SECTION ON MEDICAL HISTORY.

MEETING OF TUESDAY, NOV. 21, 1916, 8.15 P. M.

DR. FRANCIS F. PACKARD in the Chair.

PALAEOPATHOLOGY.

ARNOLD C. KLEBS, M.D., Washington, D. C.: The term "palaeopathology" may well be used to designate that larger group of variegated efforts which are likely to promote our understanding of the injuries and diseases of man in the light of past records or actual traces. It is desirable to confine under the aegis of this term only the observations made directly on the human remains from earlier epochs of the human race and embracing data both positive and negative. There has been opened recently at San Diego, California, what is probably the richest palaeopathological collection; credit for which is due to Dr. Hrdlicka. It is quite proper that these new efforts should be considered as forming a part of historical research in medicine and not be set apart as prehistoric. The close of that so-called prehistoric era has been put back to that remote time when, at the end of the fourth glacial epoch, man's mind was already found to express itself in readable terms of art and industry. This means a net gain to human history of some 25,000 years. We may justly regard Rudolf Virchow as the founder of palaeopathology. Its establishment as a special branch of research dated from the archeological survey undertaken by the Egyptian Government in 1908 and 1909, carried out particularly by Drs. Marc Armand Ruffer, G. Elliot Smith and Wood Jones. By immersion into certain solutions Dr. Ruffer was able to soften and swell some of the mummified tissues so that they could be embedded in paraffin, cut and stained. The cellular structure of some of the tissues could be well made out, as for instance the glomeruli and tubuli of the kidney, the alveoli in the lungs, the coats of the intestines and striated muscle fibres. Some of the more notable pathological findings were atheroma of the arteries, pulmonary anthracosis, abscesses of the kidney, pleural and peritoneal adhesions, vesical and renal calculi. The bone findings also revealed conditions which may shed light on so-called rheumatic and tubercular bone diseases. Without such circumstantial evidence as the type of mummification, posture of the body in the grave, its orientation, the geologic and cultural strata, objects of adornment, clothing, etc., the excavated pathologic specimens have slight scientific value. Chiefly Egypt and Peru have furnished the more important specimens. We can trace in these relics the primitive state of man, when his fate was sealed almost exclusively by a fatal injury or old age, to that of the more complex nosology of our days. Sometimes we can even observe the evidence of early therapeutic efforts, of surgical operations and of prolonged nursing. It may be stated upon good authority that the prehistoric people, on the whole, were free from rickets, tuberculosis and syphilis. The most frequent bone disease seems to have been arthritis and osteitis deformans. Gout, chemically determined as such, was seen in only one case, that

of a mummy from an early Christian cemetery. In Egypt the evidences of osteitis deformans go back to predynastic periods. The alterations are characterized by evidence of inflammation and the superposition of new bone tissue, regular stalactites such as are rarely found nowadays. The bone changes present striking resemblances to tuberculous bone disease, but closer investigation shows absence of distinct necrosis and medullary foci and the presence of features which exclude the diagnosis of tuberculosis according to our morphologic and bacteriologic notions of the disease. The lumbar column is most frequently affected with the spondylitic lesions and practically no archaic man seems to have been entirely exempt. The derivative for "old age" in hieroglyphic writing, it may be interesting to mention, is the picture of a deformed man (Ruffer). Pathologically it is the intensity of the process rather than anything else that distinguishes the ancient disease from the modern. Under the term of osteoporosis structural alterations in cranial bones of young individuals, apparently without counterpart in modern pathologic experience, have been frequently encountered in Egypt and Peru. Two forms are discernible; one, characterized by circumscribed patches of porous osteophytes; in the other, the porous condition prevails without marked osteophytic proliferation, but also without evidence of bone necrosis. The teeth of the ancient Egyptians, similar to those of archaic people generally, are usually found in a state of excellent preservation. In skulls from later burial grounds, however, changes are noted resembling conditions of dental caries seen today. The effects of injuries can be observed in ancient bones in great variety. The Egyptian findings show an almost entire absence of sepsis and a pronounced tendency to natural repair. A high degree of skill is revealed in those fractures which had to be set artificially. From the 5th Dynasty we know that splints were applied in fractures and some were still *in situ* on the mummies. The collection of ancient surgery, based on the Hippocratic treatise on joints, and commented upon by Apollonius of Kitium (1st century B. C.) is preserved in a precious illustrated Greek codex of the 10th century in Florence. Among the striking findings of Ruffer and his associates are the calcified ova of the schistosoma haematobium and the arterial lesions. Bilharziosis, still observed in Egypt, can probably be identified with the *asa* disease of the Ebers and Brugsch papyri. There is evidence of the astonishing frequency of arteriosclerosis. In some cases Ruffer found the arteries transformed into rigid "bony" tubes. The arterial coats and annular fibers after decalcification and staining were clearly distinguishable in these 3000-year-old specimens. The etiology of arteriosclerosis is of interest in the light of these venerable testimonials. Injury and disease have played an important part in the history of mankind and in the concatenation of specialized scientific inquiries palaeopathology forms a precious link which well merits widespread attention.

The search for evidences of a primitive therapeutics can bring forth material which may throw a light on the earliest origins of medicine and on questions about the spread of culture over the earth,—questions which just now have again been agitated by the sensational conclusions drawn by Dr. G. Elliot Smith, who holds that all evidence of culture in the various lands of the earth can be traced to the

direct influence of emissaries from that great civilization built up in Egypt between 4000 and 900 B. C. The theory is based upon striking resemblances of certain rather bizarre cultured features (the heliophilic culture-complex) encountered in all these widely separated districts. These resemblances are indeed striking and forcibly suggest an interrelation of these people during some remote epoch; but it is difficult to understand by what trick of logical acrobatics Dr. Smith arrives at the summary denial of the possibility of spontaneous, independent rise of a primitive culture based on the innate tendency of man to improve his surroundings, to avoid or alleviate suffering or to correct physical defects.

DISCUSSION.

DR. JOSEPH SAILER: In studying prehistoric life in reference to the human race one is conscious of the extreme paucity of definite material and of the very elaborate superstructure of deduction which has been built therefrom. On the other hand, there are certain rather broad general principles that seem to be pretty obvious. As Grant has shown, we have among us, as probably we all have observed, reversion types to these primitive men. We see types resembling, at least, the reconstructed prehistoric man that has been attempted by delvers in prehistoric matters. The beginning of medicine I think must have occurred with the beginning of the appreciation of form. I can imagine that history must have begun in very much the same way and that the members of the Greek race had a keen perception of form. The tropical climate, which gave little opportunity for the preservation of the human body in prehistoric time, I think may explain why we have almost nothing relating to infection. Dr. Klebs has given us valuable data which may be used as a working hypothesis in guiding us to the discovery of new data upon this which is perhaps an academic subject but one which at least to me is of extreme interest.

BURKE AND HARE, AND THE PSYCHOLOGY OF MURDER.

DR. CHARLES W. BURR: The lives of Burke and Hare furnish a clinic in criminal psychology. Their vocation was the murdering of people in order to sell the bodies to teachers of anatomy. While not originators of the trade, they were, so far as I know, the only wholesalers. As early as 1752 Helen Torrance and Jean Waldie were executed in Scotland for a similar crime. "Body snatching" began in Edinburgh from scientific necessity. Every now and again there were outbursts of popular anger on account of the desecration of graves and about 1725 Monro's anatomical establishment was destroyed by a mob. Not only students, but sometimes physicians deprived the worms of their food. Until body snatching became associated with murder the law-making body regarded the offence much less seriously than the people. Burke and Hare confessed that they had committed sixteen murders between the twelfth of February and the first of November, 1828. They seem to have been led into the business by accident. Burke, his mistress, Helen McDougal, Hare and his wife, or she who figured as such, lived together in Edinburgh, where Hare had a vagrants' boarding house. Donald, a harmless old man who boarded with him, died, owing Hare four pounds. Hare and Burke took the body from the coffin furnished by the parish authorities and sold it to Dr. Knox's assistant, William Ferguson, later Sir William, and Dr. Thomas Wharton Jones,

receiving a fee of seven pounds ten shillings. This was "easy money" and, being men of criminal instincts, they continued murder as a business. Their method was to make their victims helplessly drunk and then suffocate them; wounds on the body might raise unpleasant questions. One murder which more than all others aroused the people of Scotland was that of "Daft Jamie," a familiar figure on the streets, harmless and happy. He was suspicious of no one past boyhood. Therefore, he was readily persuaded to drink, and was then smothered. The murder that led to discovery was that of a woman named Docherty. It was decided that Burke and McDougal were the two against whom evidence was strongest. Hare was accepted as a State witness; Burke was convicted, and McDougal given a verdict of "not proven." The period was not one of indecent slowness between verdict and execution. The trial had begun December 24, 1829, and the time of execution was on the 28th of the following month. Our friends, the eugenicists, ought especially to approve the method in its prevention of the propagation of bad stock. It is very possible that England's relative freedom from crime against the person during the Victorian era was in part due to the fact that previous generations had let a good bit of blood and so purified the citizenry. On the morning of the execution, the crowd numbered twenty or thirty thousand,—not a serious-minded, quiet crowd; but a merry mob waiting to be amused, yet bloodthirsty withal. Burke seems to have been the most self-contained man there. He walked, news reporters say—though they, perhaps, were no more accurate than reporters of today—with steady step. Cries of satiated vengeance greeted the fall of the drop. The conduct of these people is a good example of what today we call mob psychology. Burke being dead, the mob wanted vengeance on Dr. Knox, and murder was prevented only by the police. Professor Monro found the brain of Burke normal, but George Combe and other phrenologists found that his character was just what the bumps indicated. The most interesting question is, What manner of people were these four who made a business of murder? Murderers are more often the offspring of weak than of wicked people. Helen McDougal seems to have been regarded as the principally bad influence in Burke's life, but whether it was the old excuse, "The woman tempted me and I did eat," or whether she was the stronger character, remains unsolved. Something in the woman held Burke,—that strange affinity of protoplasm, quite as real, quite as resistless, as chemical affinity. Of Hare at the time of Burke's trial, it was said he possessed not the slightest moral perception of the enormity of his conduct. Men are born, they do not become, murderers. The one quality I have found lacking in all the same murderers I have examined, is the moral sense,—the realization that they owe a duty to others. We do not know the cause of the absence of the moral sense, as we do not know the cause of its presence. That it is entirely distinct from intellect, I am convinced, because I have seen men far above the average mentally who were entirely without it. Further, so far as my experience goes, nothing creates this moral sense in him who has it not. I have more than once seen murderous criminals whose environment in childhood and youth was of the best, yet who went their own terrible way. The only cure is death, and the best treatment for them and humanity, execution.

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ERNEST GREGORY, *Manager,*

126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

A VICTORY IN THE FIGHT AGAINST VENEREAL DISEASE.

THE physician's attitude towards venereal disease has ever seemed an anomalous one to many. Knowing as none does better the ravages of this scourge, many propagandists seem to think that they should show it no quarter, and spare neither time nor effort to drive it from the face of the earth. And yet the general practitioner regards it neither with the rabid hate of the minister, the Puritan, or the reformer, nor yet with the good-natured cynicism of the man-of-the-world, the club man, or the rounder. He sees behind and beyond the obvious features of

venereal disease, and knows that the problem is far more extensive than appears on the face of it. He realizes that its ramifications extend in every direction into our social state, and that any attempt to legislate the thing out of existence—to tear it up by the roots, as the over-zealous reformer would do—would result in disturbances in many remote and little suspected places, and would perhaps do more harm than good. The doctor's attitude, then, towards the efforts which are put forth from time to time to make venereal disease a notifiable, and even a punishable affair, is not apt to be one of sympathy. Such a method of attacking the problem is very much like punishing a tubercular patient because someone contracted the disease from him,—a procedure the logic of which is superficial, to say the least.

However, there is not likely to be much difference of opinion on the general proposition that there should be an earlier recognition of this disease, more efficient isolation, and more active treatment. Whether this can be accomplished or not by making such diseases notifiable is a question. There is a serious attempt in England to give this a trial, although the British Medical Association is against it. That organization believes that before such a step is taken, provisions should be made for all venereal cases where the patient is indigent, to receive treatment free, that is, competent and thorough treatment. Otherwise, such a law would act merely as a feeder for charlatans.

One of the chief obstacles to the handling of these diseases in England has been the fact that they have been construed as coming under the clause in the Insurance Act where illness is caused by misconduct. The National Conference of Friendly Societies, which met in Liverpool recently, adopted a resolution, the essential point of which is that no member of a sickness benefit should be deprived of benefits if incapacitated from work through venereal disease. This marks a step forward, which cannot help but be beneficial in the fight against venereal disease. The placing of these diseases in the same category as other infectious diseases will help remove some of the stigma now attached to them, and will encourage the prompt report of such cases, thus preventing many others from becoming infected, securing earlier cure for the patients themselves and hastening the day when this insidious foe to the public weal shall be rendered innocuous.

THE MASSACHUSETTS HEALTH INSURANCE COMMITTEE.

A LARGE committee of persons who are in favor of the general principles of health insurance has just been formed, including members drawn from various parts of the State. Dr. David L. Edsall, Professor of Medicine at the Harvard Medical School, is chairman. The following extract from a statement prepared by him will indicate the purpose and scope of this body.

"A group of persons in favor of the general principle of health insurance have organized a committee drawn from various parts of the state, largely representing the groups most directly involved, with the purpose of helping to direct into wise lines any legislation that may be enacted. Some of those who are already on the committee strongly favor the Young bill, now before the legislature. Others are not yet ready to support any detailed proposal, but are studying the subject with a favorable attitude toward the principle. Persons who have either of these attitudes are on the committee, and membership does not involve giving support to any individual proposal that is yet made or that may be made. The object is rather to increase knowledge of the subject, to remove misconceptions, and to further the development of measures that will be fair to all concerned. There is much promise that health insurance will, more largely than any measure now before the public, promote co-operation and sympathy between employers and employees, and would better the economic condition of working people by the protection from distress provided in times of illness. With this it would offer opportunity for greatly improved health conditions. The committee is being formed with its central purpose a desire to further the public welfare by focusing upon the subject the attention of those who are competent to advise from various angles."

The committee includes over seventy persons.—employers, employees, physicians and others interested, the membership being as follows:

David L. Edsall, M.D., Boston; Vanderpool Adriaens, M.D., Williamstown; E. A. Bates, M.D., Springfield; Miss Mary Beard, Boston; H. W. Belcher, Boston; March G. Bennett, Boston; Charles Sumner Bird, East Walpole; W. P. Bowers, M.D., Clinton; Arthur N. Broughton, M.D., Jamaica

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A NOTICE.

THE members of the Massachusetts Medical Society are reminded that after March 1 the JOURNAL will be discontinued to those whose dues to the Society remain unpaid. Upon payment of dues, the sending of the JOURNAL will be resumed; but, though every attempt will be made to supply them, there may be difficulty in securing a complete file of back numbers for all.

MEDICAL NOTES.

THE NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS.—The second annual report of this Society, organized for the purpose of studying the causes of blindness, advocating measures to eliminate these causes, and disseminating knowledge on the subject, records a year's work of hopeful activity. They state, in summing up their statistics, that they have appealed to the eye and ear of the public through press articles, pamphlets, exhibits, lantern slides, and lectures, having published 300,000 pieces of literature, contributed to magazines and newspapers a score of articles (most of which have been copied many times), produced two new exhibits of five panels each, sent their exhibits into 46 cities and towns in 21 states, added about 150 subjects to their list of lantern slides, delivered or arranged for the delivery of 100 lectures, visited and served in person 10 states, corresponded with practically every state in the Union, and answered inquiries from several European countries, from South America, the Philippines, China, South Africa, India and Australia.

MENINGITIS AT NAVAL TRAINING STATION.—Report from Chicago on February 22 states that there have recently been thirteen cases and five deaths of cerebrospinal meningitis in the United States Naval Training School at Lake Bluff, Illinois.

EUROPEAN WAR NOTES.

HARVARD SURGICAL UNIT.—On Wednesday, February 21, the latest contingent of the Harvard Surgical Unit sailed from New York City on the *Andania*, under the command of Dr. Hugh Cabot of Boston. This contingent, a majority of whom will serve for the duration of the war, is to be stationed, like its predecessors, at the 22d General Hospital of the British Expeditionary Force in France. The party consisted of fifteen nurses and the following physicians and surgeons: Dr. Thomas J. Blackshear, Jr., Dublin, Ga.; Dr. E. Stanley Bridges, St. John, N. B.; Dr. Eldon D. Busby, Ottawa; Dr. Pinco Chase, Hyannis; Dr. Ernest G. Crabtree, Brookline; Dr. Thomas D. Cunningham, Brookline; Dr. Ezra S. Fish, New York; Dr. Francis B. Grinnell, Charles River Village; Dr. Jefferson W. Hawthorne, North Cambridge; Dr. Don J. Knowlton, Greenwich, Ct.; Dr. Fabyan Packard, Allston; Dr. Albert O. Raymond, Brockton; Dr. George C. Shattuck, Boston; Dr. Oliver H. Stansfield, Worcester; Dr. William P. Sweeny, New York; Dr. Leonard M. Van Stone, Brookline; Dr. George Watt, East Providence; Dr. Edward S. Welles, Boston; Dr. David E. Wheeler, New York; Dr. Harry W. Woodward, Boston, and Dr. John S. Young, St. Louis.

Dr. David F. Ford, of New York, who sailed on the *Tuscania*, Feb. 16, is to join the party in England.

Of these all are Harvard graduates except the following: Thomas J. Blackshear, Jr., Atlanta Medical School; Jefferson W. Hawthorne, University of Michigan; Albert O. Raymond, Tufts College; Oliver H. Stansfield, University of Pennsylvania; William P. Sweeny, Albany Medical College; David E. Wheeler, Physicians and Surgeons, New York; John S. Young, Barnes Medical College, Kentucky; Ezra S. Fish, University of Pennsylvania.

WAR RELIEF FUNDS.—On March 3 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$289,961.89
French Wounded Fund	199,907.97
Armenian Fund	158,978.53
British Imperial Fund	90,140.15
French Orphanage Fund	85,998.66
Surgical Dressings Fund	76,266.47
Polish Fund	61,773.27
French Phthisis Fund	13,214.04

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Feb. 24, 1917, the number of deaths reported was 295, against 277 for the same period last year, with a rate of 19.91 against 18.99 last year. There were 31 deaths under one year of age, against 51 last year, and 87 deaths over 60 years of age, against 72 last year.

The number of cases of principal reportable diseases were: diphtheria, 79; scarlet fever, 40; measles, 108; whooping cough, 2; typhoid fever, 3; tuberculosis, 47.

Included in the above were the following cases of non-residents: diphtheria, 14; scarlet fever, 4; typhoid fever, 2; tuberculosis, 6.

Total deaths from these diseases were: diphtheria, 10; whooping cough, 1; tuberculosis, 22.

Included in the above were the following deaths of non-residents: diphtheria, 5; tuberculosis, whooping cough, 1.

The Massachusetts Medical Society.

COMMITTEE OF 23 ON HEALTH INSURANCE.

By direction of the President the Committee of 23 on Industrial Health Insurance, appointed by the Council, at its meeting, February 7, 1917, will meet at the Boston Medical Library, Tuesday, March 13, 1917, at 12 o'clock noon, to organize, choose officers and transact business.

WALTER L. BURRAGE,
Secretary of the Society.

Correspondence.

INDUSTRIAL HEALTH INSURANCE:
A REJOINDER.

New York City, February 27, 1917.

Mr. Editor:

I am wondering why in a discussion of any problem it is at all necessary to assume the very personal and somewhat offensive tone of Dr. Whitehill's letter in your issue of February 22nd. Since the Doctor for some reason prefers to refer to me repeatedly as "Dr." Rubinow, and also comments upon the fact that the letter in your JOURNAL carried the "M.D." next to my signature, while in the newspapers the same letter appeared without such designation, it appears necessary to make the following two statements:

1. I did not at this time, nor do I as a rule sign my letters with the "M.D." or any other title, and the "M.D." in your JOURNAL was attached by someone without my knowledge, probably by the printer, with a fine appreciation of uniformity.

2. I do possess a perfectly legal M.D. from the N. Y. University Medical College (1898) of which I am not, however, making any use, and also a Ph.D. from Columbia University, so that I may be referred to as Dr. Rubinow quite properly without any quotation marks.

The question Dr. Whitehill raised and upon which I tried to throw some light of information, is a statistical more than a medical one. Though Dr. Whitehill may not know, I have some 17 years of statistical experience, and am quite used to handling statistical problems. The accuracy of my computation, and not the legitimacy of my medical degree, was the real question at issue.

In his latest letter Dr. Whitehill shifts to an entirely new statistical statement, this time referring to maternity care, and assumes that \$35 will be necessary for each maternity case to pay for fourteen days in a hospital. It is reasoned, therefore, that not enough money will be left for medical service. Of course, the assumption that all the 92,978 cases of birth will receive hospital treatment, or need it, is quite at variance with facts. I wonder if it has occurred to Dr. Whitehill that such an arrangement would require at least 3,500 hospital beds for obstetrical cases alone, even if we were to figure on these beds never having a day's rest to cool off—and also a similar number of cribs.

It happens, Mr. Editor, that statistics is a discipline of its own, perhaps commensurate with medicine in its dignity as a profession. A degree of M.D. does not necessarily disqualify one from ever becoming a statistician, but neither is it sufficient to qualify one for the practice of statistics. Within the last year the States of California, Kentucky, Nevada and Massachusetts have called upon me for professional advice. I don't see, therefore, why this should alarm Dr. Whitehill so. But of course, I think it but fair that I be judged only by statements made by myself, orally or in writing, and not by anyone else's statements or computations.

May I add a few lines concerning the monograph by Dr. F. Friedensburg, entitled "Practical Results of Workmen's Insurance in Germany," recommended by Dr. G. E. Whitehill in a letter in your issue of February 15, 1917. This is a well-known attack upon the whole German Social Insurance System. The English translation of this pamphlet was paid for, published and lavishly distributed by private casualty insurance companies. Having been a physician for a few years, I still remember enough Latin to quote:

"Timeo Danaos et dona ferentes." To be fair to Dr. Friedensburg's point of view, I may also suggest Professor Ludwig Bernhard's monograph, "Undesirable Results of German Social Legislation," the title

sufficiently characterizing the contents. Again, this has been translated, published and lavishly distributed by the same casualty companies.

But neither Friedensburg nor Bernhard represent the point of view of the vast majority of German students. Those who read German may read the works of G. Zacher, F. Zahn, P. Kaufman (Schadenverhütendes Wirken in der deutschen Arbeitserversicherung), Ewald (Lehrbuch der Sozialer Medizin), to mention a few only. I do not find insurance companies translating and distributing these works.

Especially is Dr. Ewald's work of some 800 pages important. Dr. Ewald is a professor of a German medical school. He is very militant in his defense of the profession and often severely criticizes certain details of the German law which fail, in his opinion, to offer sufficient protection to the physician. But at the same time he is enthusiastic in his praise of the general social results of health insurance and its effect upon the prosperity and health of the German nation.

It is this way: If either Friedensburg or Bernhard were very progressive men, who believed in social legislation, then any criticism of the German Social Insurance system would have deserved most careful consideration; as, for instance, any criticism made by Professor Ewald deserves. But both of these men object to any progressive tendency. They are thorough reactionaries in spirit. And they say things which reactionaries would be expected to say.

If we object to the importation of European institutions, why import European pamphlets and European arguments? What do American professors say? The California Social Insurance Commission was determined to find out the attitude of American students of economics and social problems. It sent out many letters of enquiry to all the members of the American Economic Association and received some 675 replies. Of these, 587, or 87%, were in favor of social insurance, 61, or 9%, were non-committal, and only 27, or 4%, were opposed to it. Of the 587 in favor of social insurance, 450, or 77%, advocated a compulsory system. Some 453 replies indicated their order of preference between the different branches of social insurance: 270, or some 66%, selected health insurance as their first choice, and 117, or some 25%, as their second choice. These facts are stated in the report of the Social Insurance Commission (p. 280-283).

Supposing now that someone were to ascertain the name of the opposing 4% and quote their opinions. Would they be representative of present American thought on the subject? No more is Dr. Friedensburg or Professor Bernhard of the prevailing German thought.

I. M. RUBINOW.

INDUSTRIAL HEALTH INSURANCE: AN
APPRECIATION.

Greenfield, Mass., February 24, 1917.

Mr. Editor:

In common with other physicians throughout the State, I have watched with some concern and a bit of anxiety the trend toward some sort of Health Insurance in Massachusetts, and as a constant reader of the BOSTON MEDICAL AND SURGICAL JOURNAL, I have also been interested in your attitude toward this very important question, and I desire to commend your stand; for, so far as I can determine, your attitude has been one of fairness based, I believe, upon the recognition of the fact that there is a possibility that some form of industrial health insurance is needed in this State, but that before it should be given sanction by statute, the matter should be threshed out very carefully by the medical profession and also among the laity, as far as they are competent to discuss it; and I trust because some members of the profession are evidently misinterpreting your attitude, that you will not permit yourself to be unhorsed but will continue your effort to present both

sides until such time as a more thorough canvass of the subject will have shown what initial project is wise for the medical profession, as a whole, to endorse.

The matter is of such very great importance to everybody concerned, not only the medical profession, but all sorts of lay people, that we should approach the subject with as much of an open mind as the nature of our work and the possible menace to our profession of ill considered legislation will permit.

Yours very truly,

B. P. CROFT.

EPILEPSY AND ELIMINATION.

Mr. Editor: Boston, Mass.

Since the publication, by Dr. C. A. L. Reed, of Cincinnati, of his findings in the intestinal flora and blood of epileptics of a specific micro-organism, not found in non-epileptics, which he called the "Bacillus epilepticus," there has been so much interest and inquiry in regard to this aspect of epilepsy that I think it would be fitting if you could call attention, through your columns, to a letter published in the *Journal of the A. M. A.* of to-day, which might well be overlooked by the casual observer, in which, as a result of more recent work of which he speaks, Dr. Reed makes the following statement:

"In view of this finding, I feel it my duty at once to request that so much, but only so much, of my previous contributions as relate to the identity of a presumably specific organism and to the existence of an actual bacteremia in these cases may be considered as withdrawn. I make this request with my apologies for what now seems to have been premature publication, and for which I alone was responsible."

Dr. Reed still believes that epileptics should be "treated as cases of general convulsive toxemia of intestinal origin," and hopes that still more intensive study of these cases will eventually reveal the specific etiology.

In this hope I am sure that all of us who are actively interested in this most important and distressing symptom-complex will heartily agree, especially those who believe that it is by way of the intestinal tract that the condition should be most strenuously attacked. By this I do not mean a diet of castor oil, or even salts; but rather as a result of careful study of the abnormal function so frequently present an attempt to correct it by such means as may be appropriate to the given case, in order to attain normal elimination. I remain, sir,

Yours very truly,

February 24, 1917. GEORGE CLYMER, M.D.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION, FOR THE QUARTER ENDING FEBRUARY 28, 1917.

CONTRIBUTIONS.

Dr. L. Waller Deichler, Philadelphia, Pa....\$	3.00
(Second contribution.)	
Previously reported receipts	7,958.26
Total receipts	\$7,961.26
Previously reported disbursements:	
1625 standard boxes of food @ \$2.20..	\$3575.00
1274 standard boxes of food @ \$2.30..	2930.20
353 standard boxes of food @ \$2.28..	804.84

Total disbursements

Balance

F. F. SIMPSON, M.D., Treasurer,
7048 Jenkins Arcade Bldg.,
Pittsburgh, Pa.

SOCIETY NOTICE.

NEWTON MEDICAL CLUB.—The next meeting of the Newton Medical Club will be held at the Newton Hospital on Monday, March 12, at 8.15 P.M. Speaker, Dr. John Lovett Morse. Subject, The Treatment of Acute Nephritis in Children.

HENRY W. GODFREY, M.D.,

Corresponding Secretary and Treasurer.

RECENT DEATHS.

JOHN E. WADSWORTH, M.D., who died on January 29, at Skowhegan, Maine, was born at Fryeburg, Maine, in 1875. He was a graduate of Dartmouth College and received the degree of M.D. from Bowdoin Medical School in 1896. In 1900 he settled at Skowhegan, where in 1901 he established the Somerset Hospital. He was chairman of the Maine State Board of Registration of Nurses and visiting physician to the Maine State Reformatory for Women, at Skowhegan.

SETH LOUIS LLOYD, M.D., died at his home in Williamstown, Mass., on January 7, at the age of 53. Dr. Lloyd was born in Utica, N. Y. He entered Union College but left after two years to take a medical course in the University of Maine, from which he graduated in 1886. In 1888 he began his practice in Williamstown and later opened a sanatorium at Sand Springs, in that town. His service was sought in civic affairs and he filled many positions of local prominence. He is survived by his widow.

WILLARD HALL ROGERS, M.D., of New York City, inventor of the "water electrode," used by physicians in giving electrical treatment to patients, died at his home recently. He was born in Georgetown, Del., in 1850.

DAVID LAWRENCE, M.D., a retired physician of Boston, died of pneumonia at his home in Revere, on February 9. Dr. Lawrence was born in New Brunswick in 1829. He lived for many years in Dresden, Me., and had spent the last thirty years of his life in Boston, practicing his profession the greater part of the time. He is survived by four sons.

EDWARD LUTHER PARKS, M.D., a Fellow of the Massachusetts Medical Society since 1877, died at the Boston City Hospital, February 8, aged 67 years. He was born in Boston, May 14, 1849, was educated at Phillips Exeter Academy, and at Harvard College from 1868 to 1871, receiving his M.D. from the Jefferson Medical College in 1874. He practiced in Philadelphia from 1874 to 1877, when he settled in Boston, where he engaged in general practice for ten years, then going abroad. On his return he gave special attention to diseases of the eye. He was at one time a member of the First Corps of Cadets. He was not married.

ALFRED OWEN HITCHCOCK, M.D., born in Fitchburg, son of the late Dr. Alfred Hitchcock, died in Fitchburg, January 20, 1917, after a two weeks' illness of broncho-pneumonia, aged 74 years and nine months. He entered Dartmouth College in the class of 1863 and later enlisted in the 53d and 57th Regiments, Massachusetts Volunteers, serving in the Civil War. He rose to the rank of captain, and later was breveted major. He later served on the staff of Gen. Nelson A. Miles. He was formerly a member of the Massachusetts Medical Society, a former City Physician and Chairman of the Board of Health of this city, and for years was chairman of the Board of Examining Surgeons for Pensions. He was a member of Post 19, G. A. R., Loyal Legion and the Masons, also for many years physician to the county jail in this city.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

March 15, 1917

ADDRESS	
A STUDY OF THE PROBLEM OF THE SO-CALLED DEFECTIVE DELINQUENT AND WHAT HAS BEEN DONE IN MASSACHUSETTS. <i>By L. Vernon Briggs, M.D., Boston.</i>	371

ORIGINAL ARTICLES	
WHAT THE STATE IS DOING FOR THE SYPHILITIC AT THE STATE INFIRMARY AT TEWESBURY, MASS., BASED ON A SURVEY ON SYPHILIS AND GONORRHEA AT THE STATE INFIRMARY. <i>By Miss Ora Mabelle Lewis, Boston.</i>	380
ON VASOMOTOR UNREST IN THE INSANE: STUDIES BASED ON 20,000 MEASUREMENTS OF THE TENSION OF THE RADIAL PULSE IN 250 CASES OF VARIOUS FORMS OF INSANITY. <i>By Cilas J. Enebuske, Ph.D., M.D., Säter, Sweden.</i>	385

CLINICAL DEPARTMENT	
PULMONARY SYPHILIS: WITH THE REPORT OF A PROBABLE CASE. <i>By Cadis Phipps, M.D., Boston.</i>	390

REPORTS OF SOCIETIES	
THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS. FOURTH MEETING, APRIL 25, 1916.	392
THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS. FIFTH MEETING, OCTOBER 18, 1916.	394

WORKINGMEN'S COMPENSATION	
ARGUMENT IN FAVOR OF SENATE BILL NO. 135 BEFORE THE JOINT COMMITTEE ON THE JUDICIARY. <i>By the Committee on Workingmen's Compensation of the Massachusetts Medical Society</i>	397

HARVARD MEDICAL SCHOOL	
MEETING FOR THE AWARD OF ACADEMIC DISTINCTIONS.	401
A FUND FOR THE STUDY OF PTOMIAINE POISONING.	403

BOOK REVIEWS	
Syphilis. <i>By Lloyd Thompson, M.D.</i>	403
Diseases of the Skin. <i>By Henry Stelwagon, M.D.</i>	403

EDITORIALS	
INDUSTRIAL HEALTH INSURANCE.	404
UNEMPLOYMENT COMPENSATION.	406
MEDICAL NOTES.	406

THE MASSACHUSETTS MEDICAL SOCIETY	
ESSEX SOUTH DISTRICT.	409

CORRESPONDENCE	
COMPULSORY HEALTH INSURANCE. <i>Clarence F. Desmond</i>	411
MEDICAL PREPAREDNESS. <i>Robert E. Noble</i>	411

MISCELLANY	
RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR JANUARY, 1917.	409
NOTICES, RECENT DEATHS, ETC.	412

Address.

A STUDY OF THE PROBLEM OF THE SO-CALLED DEFECTIVE DELINQUENT AND WHAT HAS BEEN DONE IN MASSACHUSETTS.*

By L. VERNON BRIGGS, M.D., BOSTON,

Member of the Massachusetts State Board of Insanity, 1913-14, and Member and Secretary, 1914-15-16.

WHEN Dr. Herring asked me to read a paper on what Massachusetts is doing for the defective delinquents, at first it seemed to me that I had nothing to say on this subject—that Massachusetts had done practically nothing to settle this very difficult problem. The first step in doing anything efficiently is to decide what one is going to do, and it is this important first stage of accomplishment that Massachusetts is now approaching.

What we are doing for the defective delinquents in Massachusetts (as in other states) is to talk about them. The great mass of citizens have never heard of the defective delinquent, or if they have, they have no real understanding of the problems, and if the State is to care properly for these irresponsible charges, we must have the support and sympathy of the public.

Even among scientific men I find a great diversity of classifications included under this term—everything from the feeble-minded to

the responsible criminal. This paper deals with the class to which the term "defective delinquent" was first applied by the Massachusetts Commission appointed by Governor Draper, under Chapter 59 of the Acts of 1910, "To Investigate the Question of the Increase of Criminals, Mental Defectives, Epileptics and Degenerates." This commission consisted of:

Dr. Walter E. Fernald, superintendent, Massachusetts School for Feeble-Minded.

Capt. Hollis M. Blackstone, superintendent, State Farm.

Dr. Everett Flood, superintendent, Monson State Hospital.

Mr. Benjamin F. Bridges, warden, Massachusetts State Prison, Charlestown.

Dr. Ernest V. Scribner, superintendent, Worcester State Hospital.

They found in their investigations a class of persons who did not come under the classification of the mentally ill, feeble-minded or criminal, but were a group by themselves, and to this group they applied the term "Defective Delinquents," which classification has been adopted in many parts of this country. Dr. Fernald stated that this term was used as a tentative grouping of cases for further study and classification, and to bring them under observation. The term "defective delinquent" may be perhaps more a legal than a medical term, but Dr. Fernald's idea was to bring the two divergent points—medical and legal—together into a term that would cover each, hence the coining of the term "defective delinquent."

There is a great variation in percentages given in different States in these groups of cases,

*Read at the Twelfth Maryland Conference of Charities and Correction (including Delaware, District of Columbia and Maryland), Baltimore, Nov., 1916.

probably due to lack of uniform terminology or classification. Mr. Frank L. Randall, Prison Commissioner of Massachusetts, wrote a letter to all the wardens in the United States and to all persons in charge of schools for juveniles, and asked this question: "To what extent do you recognize mental inadequacy and constitutional inferiority among the persons in your charge?" Among prisons for adults the range was from 3 out of 240 in (Wyoming) to over 60 per cent. in one prison (Michigan); state reformatories, 25 per cent. to 40 per cent.; juvenile institutions, from 5 per cent. (Idaho) to 100 per cent. (Iowa)!

The Psychopathic Hospital does not use the term "defective delinquent" at the present time, holding that it is a legal or criminological term rather than medical. According to Dr. Southard, they have at the Psychopathic Hospital, in addition to their epileptic, feeble-minded and psychotic groups, a psychopathic group which contains many cases of what Kraepelin terms "psychopathic personality," but it also includes a good many sex, kleptomaniac, pyromaniac and other monomaniac subjects whom Kraepelin would not put in the "psychopathic personality" group. Southard says, regarding the sex group, that a large number could be safely taken care of in the right environment; they do not seek sex delinquencies; they do not go out after sex experiences, but, to use his term, are the subjects of a "football" environment, and, having no will power to resist, become easy victims to such an environment. Of the epileptic group, he says there are a certain number who are epileptoid, or epileptic equivalents, who are often violent in a rather hazy and confused condition of mind, and quite forgetful.

The serious efforts of scientific men to classify and treat the defective delinquent as a separate problem prove that our experts at least are ready for a special institution and also prove that there is great need of a standardized classification so that they may intelligently discuss the matter and compare statistics. The Binet-Simon, Yerkes and other psychometric tests, taken alone, are not conclusive, but are helpful only in making a diagnosis in the same way that a blood or urinary examination is helpful in making other diagnoses.

At one or more of our state hospitals this group is mainly classified under the head of "constitutional inferiors," which term is also used at the Boston Psychopathic Hospital to some extent.

Dr. Guy G. Fernald, resident physician at the Massachusetts Reformatory (for men) at Concord, says the term *defective delinquent*, like the term *insane*, has a social significance as well as a psychiatric or laboratory significance, and he has recently worked out a new classification, in which he says the members of the defective delinquent class are scattered

among the various groups of the segregable, which is as follows:

CROSS REFERENCE SYLLABUS OF PSYCHOPATHIC DIAGNOSES.

MASSACHUSETTS REFORMATORY, CONCORD, 1914-1916.

GRADES OF EFFICIENCY				
	INTRAMURAL DESCRIPTIVE DESIGNATION	ADULT	SUBNORMAL	SEGREGABLE
Competent	Accidental offender	50	1	
	Responsible offender	347		398
Deviate	Recidivist		118	27
	Psychopath		159	22
	Epileptic		16	9
	Congenital syphilitic		16	11
	Sex pervers		6	10
Deficient	Insane		10	10
	Moron	155	77	232
	Imbecile		3	3
	Unclassified	52	17	1
TOTAL		449	488	170
Pctg. rate		40.6	44.1	15.3
Included Above	Alcohol addict	152	239	56
	Drug addict	9	13	4
				26

A classification survey, to be of practical value, must show not only who are defective, but in what their defects consist, and this is what Dr. Guy G. Fernald has done in his cross-reference syllabus of psychopathic diagnoses at the Massachusetts Reformatory. In fact, Dr. Guy G. Fernald is to date ahead of any one in certain fields of this problem.

There has been some discussion as to the best time for examining inmates of institutions, especially in the prisons. Dr. Guy G. Fernald does not consider that any of the uniform psychometric tests are of much value in his prison population, but has substituted what he terms a psychonological examination which is more elastic and is an examination for psychic classification for medical treatment. This is not given until just before discharge. His reasons are threefold:

(1). Since an actual physical segregation of classes is not possible with the existing physical equipment, there is no need for reaching our "paper" classification earlier.

(2). The field investigator's report cannot be in readiness early in the period of incarceration and the findings of that department are indispensable for the laboratory examination.

(3). The social service purpose of the interview are much better subserved by the later interview than would be the case before the effects of institution life and teaching had had an oppor-

tunity to be assimilated by the prisoner. Both plans have been tried and the one in use is by far the more successful.

Dr. Fernald adds that later, when an actual physical segregation of prisoners may be made following the psychonological examination, the time of that examination will doubtless be advanced to a point earlier in their stay.

There should be no single test, repeatedly used, for examining defective delinquents, or at least the form of the test should be varied. There are today a number of "hospital rounders" who get onto the test and even get copies of the different papers which are used in the examinations and become proficient in their answers. Psychologists are now recognizing these self-prepared individuals and are changing the form of questions and spontaneously devising new ones in order to get a fair test, frequently to the surprise of the subject.

There is the same danger in the prisons from a uniform examination, and it has been noted by certain psychologists that after the third or fourth day the mental ages of the prisoners rise rapidly, due to the underground route by which inside information on tests passes current in the underworld with a rapidity almost unbelievable, and to such an extent that it soon becomes—like other administrative information—stock in trade, for its value in tobacco, etc.

I agree with Mr. Rossy, formerly assistant to our State Board of Insanity, and now conducting a psychological examination of the prison population at Sing Sing, who, in his report to the Massachusetts State Board of Insanity, gives his plan with regard to the psychological work of the State Prison, which is:

1. A psychological examination should be given to every new inmate of the prison. As the men come into the prison, they should be referred for a mental examination in the same manner that they are referred for a medical examination.

2. The findings of the psychological examination, together with such history as is necessary for a psychological diagnosis, should be entered in a special card catalogue, which should be available to the prison officials.

3. A psychological examination should be given immediately before any prisoner comes up before the Parole Board. In every case this examination should be supplemented by a thorough study of the history of the subject. This history, as required for aid in diagnosis in the psychological examination, must include the following branches:

(a) family, (b) personal, (c) school, (d) social, (e) economic, (f) moral, and (g) medical. A detailed written report should be required of the psychologist on every case coming up before the Parole Board.

In addition, I believe that a psychometric test should be given at the time of discharge of all prisoners, different in form from the one which the subject originally received.

Dr. V. V. Anderson, the medical director of

the Municipal Criminal Court of the City of Boston, finds that the term "defective delinquent" is being used by different examiners to define markedly divergent types, and that "altogether we have presented to us a rather loose and confusing symptomatology connected with the term 'defective delinquent.'" He has therefore divided this group into three classifications:

First,—the *mental defective*, believing that "defective" used in reference to the mind of an individual should carry with it a lack of normal mental development, and should have a very definite meaning to us that is demonstrable by exact measurements.

Second,—*psychopaths*, a group of persons whose intellect is not impaired but who are impulsive, neurotic and unable to adjust themselves to their environments, all "psychopaths" being cases of constitutional inferiority. The mentality of the psychopath is disordered. The mentality of the mental defective is defective.

Third,—*mental delinquents*, a distinctly criminal class, this being a social classification. The acts of this group are anti-social; they are deliberate and oftentimes well planned and cruel.

The judges of the Municipal Criminal Court refer only such cases to the Medical Director as are obviously abnormal, either in their appearance, their history or their acts. Of the last 1,000 cases referred to Dr. Anderson, he has found:

37.0%	"mental defectives"
8.9%	insane
10.7%	subnormal (including tubercular cases, epileptics, drug habités and cases of possible constitutional subnormality)
6.9%	"mental delinquents"
17.6%	"psychopaths"
5.1%	alcoholic deterioration
4.0%	epileptics
9.7%	normal

showing that 61.5 per cent. of these 1,000 patients come under his three classifications of the term usually designated "defective delinquent."

Dr. Anderson reports that a large group of these cases from the Criminal Court are taken care of in the community under probation with more or less success, and that, failing a suitable institution, others are committed as insane, or, if they are at all alcoholic, are sent to the Norfolk State Hospital under the Massachusetts law for two years' commitment for alcoholic cases. Others are sent to the reformatories at Sherborn and Concord, to the industrial schools at Lancaster and Shirley, or to the epileptic colony at Monson. Many are sent to the Psychopathic Hospital for observation.

Now as to what is being done or has been done in Massachusetts, a most interesting work is now being done for these unfortunates in the Boston Municipal Criminal Court. Judge Bol-

ster has been a powerful factor in obtaining the appointment of Medical Director Dr. V. V. Anderson, and was active in obtaining \$6,000 per year from the authorities for a Department of Medical Service. There is a plan now on foot to call Dr. William Healy, of the Juvenile Court of Chicago, to the Juvenile Court of Boston, which now has no medical director, for the examination of these cases. This movement has been started in memory of the late Judge Harvey H. Baker, and most of the money so far subscribed, i. e., \$65,000, has been subscribed by friends and classmates of the late Judge Baker.*

A survey of 400 inmates of the Massachusetts Reformatory for Women at Sherborn was made by Dr. Edith R. Spaulding, but she did not use the term "defective delinquent," so it is difficult to get the percentage of these cases at this institution. She did find about 24 per cent. feeble-minded and about 16 per cent. epileptic, but this latter percentage includes many cases of petit mal, fainting, etc.

Following the report of the "Commission to Investigate the Increase of Criminals, Mental Defectives, Epileptics and Degenerates," of which Dr. Walter E. Fernald was chairman, and on their recommendation, the Legislature passed the following:

CHAPTER 595—ACTS OF 1911.

AN ACT TO PROVIDE FOR THE MAINTENANCE AT THE REFORMATORY FOR WOMEN, THE MASSACHUSETTS REFORMATORY AND THE STATE FARM OF DEPARTMENTS FOR DEFECTIVE DELINQUENTS.

Be it enacted, etc., as follows:

SECTION 1. If in any case where a court might by way of final disposition commit an offender to the state prison, the reformatory for women, or any jail or house of correction, or to the Massachusetts Reformatory, the State Farm, or to the Industrial School for Boys, the Industrial School for Girls, the Lyman School, any truant school, or the custody of the State Board of Charity, for an offence not punishable by death or imprisonment for life, it shall appear that the offender has committed the offence with which he is charged, is mentally defective, and is not a proper subject for the schools for the feeble-minded, or for commitment as an insane person, the court may commit such offender to a department for defective delinquents, hereinafter established, according to the age and sex of the defendant as hereinafter provided.

SECTION 2. If an offender while under commitment to any of the institutions or to the board named in section one of this act persistently violates the regulations of the institution or board in whose custody the offender is, or conducts himself or herself so indecently or immorally, or otherwise so grossly misbehaves as to render himself or herself an unfit subject for retention in said institution or by said board, and it appears that such offender is mentally defective and is not a proper subject for the schools for the feeble-minded, the

physician in attendance at such institution, or a physician employed by said board, shall make a report thereof to the officer in charge of said institution or to the superintendent of minor wards of said board, who shall transmit the same to one of the judges mentioned in section twenty-nine of chapter five hundred and four of the acts of the year nineteen hundred and nine. The judge shall make inquiry into the facts and, if satisfied that the offender is mentally defective and is not a proper subject for the schools for the feeble-minded, shall order the removal of the offender to a department for defective delinquents, hereinafter established, according to the age and sex of the defendant as hereinafter provided.

SECTION 3. No person shall be committed to a department for defective delinquents under the two preceding sections unless there has been filed with the judge a certificate of the mental defectiveness of such person by two physicians qualified as provided in section thirty-two of chapter five hundred and four of the acts of the year nineteen hundred and nine and acts in amendment thereof or in addition thereto. The fees of the certifying physicians shall be of the amount and paid in the manner provided for like service in said chapter five hundred and four, and acts in amendment thereof and in addition thereto.

SECTION 4. If an inmate of a school for the feeble-minded persistently violates the regulations of the school, or conducts himself or herself so indecently or immorally, or so grossly misbehaves as to render himself or herself an unfit subject for retention therein, the officer in charge of the school shall make a report thereof to one of the judges mentioned in section twenty-nine of said chapter five hundred and four. The judge shall make inquiry into the facts and, if satisfied that such inmate is not a fit subject for retention in the said school, shall order the removal of the inmate to a department for defective delinquents, hereinafter established, according to the age and sex of the inmate as hereinafter provided.

SECTION 5. At the reformatory for women, the Massachusetts Reformatory and the State Farm there shall be maintained departments to be termed departments for defective delinquents, for the custody of persons committed thereto under this act. All male persons under twenty-one years of age committed under the provisions of this act shall be committed to the department at the Massachusetts Reformatory. Men twenty-one years of age, or over, committed under this act shall be committed to the department at the State Farm. All women and girls committed under this act shall be committed to the departments at the reformatory for women. All persons committed to the departments for defective delinquents hereby established at the reformatory for women and the Massachusetts Reformatory shall be and remain in the custody of the Board of Prison Commissioners until discharged as hereinafter provided, and all persons committed to the department for defective delinquents hereby established at the State Farm shall be and remain in the custody of the trustees of the State Farm until discharged as hereinafter provided.

* Since this paper was read, the full amount necessary for salary and expenses for ten years has been raised and Dr. Healy's appointment is assured.

SECTION 6. The prison commissioners and the trustees of the State Farm may, respectively, parole inmates of the departments for defective delinquents, herein provided for, at their respective institutions, on such conditions as they deem best, and they may at any time recall to the institution any inmate paroled.

SECTION 7. Any person may apply at any time to the justice of the district, police or municipal court in whose jurisdiction a department for defective delinquents is located, for the discharge of any inmate of said department. A hearing shall thereupon be held by said justice, of which notice shall be given to the applicant and to the person in charge of the institution where the inmate is confined. If after the hearing the justice shall find that it is probable that the inmate can be suffered at large without serious injury to himself or herself, or damage or injury or annoyance to others, the authorities having custody of said inmate shall parole the inmate. Further action on the application for the inmate's discharge shall be suspended for one year from the date of his or her parole. If at the end of said year the justice of the court where the application was filed shall find that said inmate can be suffered to be permanently at large without serious injury to himself or herself, or damage or injury or annoyance to others, the authorities having custody of said inmate shall discharge the inmate. If, at any time prior to the expiration of said year of parole, the justice of the court where the application was filed shall be satisfied that the best interests of said inmate, or of the public require the recall of the inmate from parole, he may authorize the authorities having custody of the inmate to recall the inmate from parole. If an application is denied, a new application shall not be made within one year after the date of the order denying the previous application. If a person discharged under the provisions of this section is found by any court to have committed, after his discharge, any offence against the laws of the commonwealth, said court may commit such person to a department for defective delinquents without the certificate of any physician.

SECTION 8. Any special justice, when holding court at the request of the justice, shall have the powers and perform the duties of the justice under this act. In case of a vacancy in the office of justice and in the case of the illness, absence or other disability of the justice, the special justice who holds the senior commission shall, if no request has been made as aforesaid, have the powers and perform the duties of the justice under this act.

SECTION 9. The record of all proceedings under this act, and all papers in connection therewith, shall be kept as provided in section forty-one of chapter five hundred and four of the acts of the year nineteen hundred and nine, and the same docket shall be used for the proceedings under this act which is used under said section forty-one.

SECTION 10. All commitments under this act shall be made under an order signed by the judge making the order. Orders for commitment may be served by any person qualified to serve any processes issued from the court in which the justice making the commitment sits or, in case of trans-

fers, by any officer or attendant of the institution from which the transfer is being made. The officer or other person serving such order shall make return of service on an attested copy of the order.

SECTION 11. All the expenses attending all proceedings under this act shall be allowed, certified, and paid in the manner provided in section forty-nine of chapter five hundred and four of the acts of the year nineteen hundred and nine and acts in amendment thereof and in addition thereto.

SECTION 12. This act shall take effect when the departments named in section five are ready for occupancy. The prison commissioners and the trustees of the State Farm shall notify the Governor when said departments are in a suitable condition to receive inmates; and the Governor may then issue his proclamation establishing such departments as places for the custody of defective delinquents. (Approved June 27, 1911.)

This law was drawn up by the late Judge Baker and provides for the legal recognition and commitment of these irresponsible individuals who are designated as "defective delinquents." The purpose of the law was also to provide that these defective people should not be discharged at the end of their prison sentences to go out into the community to commit other crimes and to reproduce their own kind. That this law has never become effective is due to the fact that Section 5 did not provide any money for the carrying out of the same, therefore, in 1913, a resolve was passed providing \$25,000 to lease and equip a building and support those committed and to pay the expenses of commitment, as follows:

RESOLVE 124. ACTS OF 1913.

RESOLVE TO AUTHORIZE THE LEASING OF TEMPORARY QUARTERS FOR DEFECTIVE DELINQUENTS.

Resolved, that the Governor and Council are hereby authorized to lease and equip, in the name and behalf of the commonwealth, for such time and on such terms as they may deem advisable, buildings and grounds for the care of defective delinquents until more permanent provision has been made in accordance with chapter five hundred and ninety-five of the acts of the year nineteen hundred and eleven. Commitments to the place or places so leased shall be made in accordance with the provisions of said chapter five hundred and ninety-five. The expense which may be incurred under the provisions of this resolve, including the cost attending the commitment, custody and support of defective delinquents so committed, to an amount not exceeding twenty-five thousand dollars, shall be allowed and paid out of such of the prison industries funds as the prison commissioners, with due regard to preserving the necessary sum to maintain the industries of the institution for which the fund was established, may designate. (Approved June 13, 1913.)

This again proved ineffective, as the sum of \$25,000 was not enough to build or equip any

building available in the State, therefore, at the end of 1913, there was *law* enough to segregate this group if appropriations had been made to provide properly a place in which to segregate them.

On December 17, 1914, the State Board of Insanity, of which I had the honor of being a member, voted to take a census of the defective delinquents in the State Hospitals under its control, with the result that on April 1, 1915, there were found in the State Hospitals for the mentally ill and the schools for the feeble-minded, 158 defective delinquents who were neither mentally ill nor feeble-minded. This figure probably did not represent the whole number by any means, as many of the inmates of the institutions were in such a mental condition that they could not be tested intelligently, as their defectiveness was complicated with psychoses. It is a well-recognized fact that the "defective delinquent" group is a fertile soil for mental disease.

From the time of my appointment on the Board, we were frequently receiving requests from different superintendents to transfer from institutions many of these defective delinquents, who were trouble-makers and yet not really mentally ill. The Board transferred them from hospital to hospital, which often resulted in temporary benefit to the patients and relief to the institutions from which they were transferred. They were then tried in one of our colony groups by transfer of a certain number from one of our State Hospitals, with the result that the Superintendent soon asked for a re-transfer of the entire group of the so-called "defective delinquents," with the report that they "were not suitable cases for the colony." The report stated that:

No. 1213 will not coöperate except for brief periods; continually in trouble; annoys and excites insane patients; obscene and profane at most times.

No. 892—A fair worker; delights in bothering stupid insane patients and teasing excitable ones. Despite efforts of the nurses, makes patients very uncomfortable.

No. 893—A very effusive, gushing, sentimental patient, subject to outbreaks of violence.

No. 1236—Sexual pervert; very troublesome; enjoys teasing insane patients and when on the wards spends most of her time doing so.

No. 970—Excitable, noisy patient, subject to outbreaks of anger on slight provocation; attacks with whatever instrument is handy.

No. 621—Indolent, noisy, profane, obscene patient, who gets along very well if let alone and not asked to work.

No. 954—A good worker, but necessary to keep under most careful supervision, as she constantly seeks opportunities to run away. Judgment is ex-

tremely poor; she has many times attempted to leave in inclement weather without proper clothing; breaks glass when irritable.

No. 1131—Patient who is alternately very affectionate and assaulting to patients and nurses. Is usually subject each day to one attack of excitement with little provocation, during which she is noisy and violent.

No. 1216—Patient who does well if handled rightly for periods as long as one month, then is subject to unreasonable outbreaks of temper, during which she threatens to mutilate herself and often to commit suicide. Enjoys making existence miserable for other patients.

No. 890—Patient who is greatly attracted to the opposite sex; needs constant supervision; possessor of tongue that is capable of applying the rudest and harshest epithets to those who have done the most for her. Reluctant to coöperate with plans manifestly for her own good.

No. 613—Patient who does well for periods of months and then is wilful and stubborn; cannot be reasoned with at these times and is childish and irritable. She has had one illegitimate child and it is still necessary to keep her under strict supervision when men folks are about.

No. 1204—A good worker but a constant fault-finder; always dissatisfied and believes she is disliked and imposed upon.

No. 898—An indolent, untidy patient, who is eager to join in trouble started by other patients, although she has never been known deliberately to assault anyone. Reluctant to move her chair so that space occupied by it can be swept. Will not coöperate with ward routine.

When these people are committed to the State Hospitals they seldom make friends with the mentally ill patients, but associate with nurses when allowed. Life in a State hospital to many of them is congenial, in that they have no work to do; they can talk and loaf and give vent to their unpleasant dispositions by teasing patients and making trouble generally.

If they are sent to the prisons, they are sent to schools of crime, and are invariably returned after parole or discharge. They constitute most of the recidivists among our prison population and the most intractable inmates of our reformatories.

Almost every institution has proved to its own satisfaction that it is not able to cope with these individuals, and the one cry is, "Send them to some other institution and not to mine," and this extends to institutions outside the control of the State Board of Insanity where the feeling is equally strong against receiving them. The superintendents of our State Hospitals conscientiously believe that they do not belong in their institutions, and they are right. The superintendents of correctional institutions conscientiously believe that they do not belong in their institutions, and they are right. This class

cannot be tolerated in the community, where they add to the ranks of vice, alcoholism, pauperism, prostitution, and every crime, to an extent which has never yet been approximately estimated, hence they *must* become State charges, and so long as the State undertakes their maintenance and custody, why should it not do so in the most humane and efficient manner, which is also the most economic?

It seemed to be up to the State Board of Insanity to solve their problem so far as this class of dependents was concerned, so on December 17, 1914, the Board voted to make a survey of the insane prison population under its charge at the Bridgewater State Hospital, which survey was made, with the result that it was found that a certain percentage of inmates were not insane but came under the "defective delinquent" classification.

The results of the survey at the Bridgewater State Hospital by the State Board of Insanity interested the Massachusetts Prison Commission, who sent the following resolve to the State Board of Insanity:

"Resolved: That this Board desires to secure a survey of the population of the prisons under its management, with a view to determining the mental condition of the prisoners, and that the State Board of Insanity be requested to extend the survey it has undertaken, of the inmates of institutions for the insane, to the prison population."

The State Board of Insanity arranged for two of its assistants, Dr. A. Warren Stearns, a psychiatrist, and Mr. Cecilio S. Rossy, a psychologist, to examine into the prison population of the Massachusetts State Prison, at Charlestown. Dr. Stearns examined 100 cases and Mr. Rossy 300, with the following results:

Dr. Stearns found 47 per cent. of his 100 cases with mental defect suggested, and referred these 47 cases to the psychological examiner.

Mr. Rossy found 23 of these cases feeble-minded, of which 2 were imbeciles, 8 low grade morons and 13 high grade morons. The 23 feeble-minded he found committable subjects to institutions for mental defectives.

Mr. Rossy found, in his examination of 300 cases, taken alphabetically, 22 per cent. feeble-minded custodial cases; 9.6 per cent. border-line cases; 3.3 per cent. presumably psychotic, to be referred to the psychiatrist.

Following this report, the State Board of Insanity decided that something must be done at the earliest possible moment to relieve its own institutions of these undesirable charges. Two men volunteered to take groups of this class for study, to see what could be done for them.

Dr. William T. Hanson, physician-in-charge of the Mental Wards, State Infirmary, Tewksbury, was willing to take a group of 50 cases but could not, for the time being, on account of lack of accommodations. Dr. A. C. Thomas, Superintendent of the Foxborough State Hospital,

was also willing to take a group of 50 cases, but was somewhat similarly situated. As the Foxborough Hospital, however, was under the control of the State Board of Insanity, it was possible for the Board to proceed to prepare accommodations for such a group, and with this end in view they asked and received from the Legislature an appropriation sufficient to renovate several buildings and especially one building at Foxborough for this purpose. This building is nearly completed and it is hoped that the transfer will soon be made.

It has been the custom among the institutions usually to place these girls on the violent or excited wards, as one girl will upset a whole ward of quiet and convalescent patients. In the same manner will one of this type also upset a whole class in a school for the feeble-minded, and render the work of the instructor futile. As the Superintendents have found that when two were placed on a ward they connived and planned escape and mischief, they have usually distributed them one to a ward, with the result that a great many wards were upset or disturbed by their presence.

In a further effort towards solving this problem and relieving the hospitals of the care of these unsuitable patients, the Board decided to choose as one of the subjects of the Thirty-fourth Semi-annual Conference (which was held at the State House on November 16, 1915), "Defective Delinquents: In What Institutions do they belong and what shall be their Present and Future Accommodations and Treatment?" Beginning on page 224 of the annual report of the State Board of Insanity for 1915 is the account of this conference and what was offered by those present.

At this conference Dr. Guy G. Fernald, resident physician at the Massachusetts Reformatory, read a most interesting paper, which is published in the above-mentioned report. The heads of virtually every institution in the State attended, and many of the trustees, also many of the heads of our departments of State government. Among those present the following either read papers or discussed the problem:

Dr. Michael J. O'Meara, Chairman of the State Board of Insanity.

Hon. Frank L. Randall, Chairman, Board of Prison Commissioners.

Hon. John Koren, U. S. Commissioner to the International Prison Congress.

Prof. Robert M. Yerkes, Psychologist, Psychopathic Hospital, and Professor of Psychology, Harvard University.

Mr. Herbert C. Parsons, Trustee, Wrentham State School.

Dr. Guy G. Fernald, Resident Physician, Massachusetts Reformatory.

Dr. Elmer E. Southard, Pathologist, State Board of Insanity and Director, Psychopathic Hospital.

Mr. Walter Rapp, Chairman, Trustees of Medfield State Hospital.

Dr. Walter E. Fernald, Superintendent, Massachusetts School for Feeble-Minded.

Dr. V. V. Anderson, Medical Director, Municipal Criminal Court, Boston.

Mrs. Jessie D. Hodder, Superintendent, Massachusetts Reformatory for Women.

Dr. A. Warren Stearns, Psychiatrist, Assistant to the State Board of Insanity.

Mr. Cecilio S. Rossy, Psychologist, Psychopathic Hospital.

An appeal was made at this meeting by those present for further conferences on this subject, and later the following notice was sent out:

Massachusetts has, for some time, through its different commissions, been studying the defective delinquent, or mental defective, with a view to obtaining, if possible, what would be the most satisfactory solution for the care and treatment of this class and for their education or re-education. A great number of them are at present confined in our prisons, jails, houses of correction, reform schools, hospitals for the insane, and in the schools for the feeble-minded, and many of them are in the community, including those on probation from the courts.

From experience it is evident that this class do not belong in any of the above places. It has therefore been proposed that we call a meeting of those interested in the solution of this problem to discuss and formulate some plan which can be mutually agreed upon for the disposition or segregation of this class.

JOHN KOREN,
FRANK L. RANDALL,
EDW. T. HARTMAN,
L. VERNON BRIGGS.

Committee on Arrangements.

In accordance with the above notice, a meeting was held, which was attended again by very nearly all the heads of the institutions of Massachusetts,—correctional, charitable and others interested in this problem, and after free discussion and the reading of many papers (a résumé of which would be impossible in this already too lengthy paper) those present voted to authorize the chairman of the meeting, Mr. John Koren, to appoint a committee of 10 besides himself to make a further study of the problem of defective delinquents and to bring some recommendations before a future meeting. Mr. Koren appointed the following committee in addition to himself as chairman:

Hon. Frank L. Randall, Chairman, Board of Prison Commissioners.

Mr. Hollis M. Blackstone, Superintendent of State Farm, Concord Junction.

Col. C. B. Adams, Superintendent, Massachusetts Reformatory (for men).

Mrs. Jessie D. Hodder, Superintendent, Massachusetts Reformatory for Women, Sherborn.

Dr. Walter E. Fernald, Superintendent, Massachusetts School for Feeble-Minded.

Dr. E. E. Southard, Director of Psychopathic Hospital and Pathologist to State Board of Insanity.

Dr. George M. Kline, Superintendent, Danvers State Hospital.

Mr. Edward T. Hartman, Secretary, Massachusetts Civic League.

Prof. Thomas N. Carver, Department of Econom-

ics, Harvard University, and Trustee, Massachusetts School for Feeble-Minded.

Dr. L. Vernon Briggs, Secretary, State Board of Insanity.

On December 23, 1915, at the call of the chairman, this committee met, every member being present. A lengthy discussion of the problem was held, and it was voted that a sub-committee of three be appointed by the chair to consider the suggestions of the larger committee which seemed to dominate at this meeting,—that Ipswich Jail and the Prison Camp at Rutland be considered as a starting-point for segregating the male defective delinquents, and that new buildings on the grounds of the Massachusetts Reformatory for Women at Sherborn be considered for the female defective delinquents. The Chairman appointed on this sub-committee:

Dr. L. Vernon Briggs, chairman.

Hon. Frank L. Randall.

Dr. Ernest B. Emerson, medical director of Bridgewater State Hospital—for the criminal insane.

Owing to the illness of Mr. Randall, Benjamin Loring Young, Esq., former member of the Massachusetts Board of Parole, was added to the committee.

After many conferences and the study of the above and other buildings, no building was found where \$25,000 would cover the necessary cost involved in remodelling and afterwards taking care of this class until further legislation could be passed to provide for their maintenance. The result, therefore, of this committee's deliberations was a bill put forth by Mr. Randall as follows:

HOUSE BILL NO. 429.

AN ACT TO PROVIDE BUILDINGS FOR DEFECTIVE DELINQUENTS.

To provide for the establishment of departments for defective delinquents, authorized by chapter five hundred and ninety-five of the acts of the year nineteen hundred and eleven, the prison commissioners are hereby authorized to construct at the Massachusetts Reformatory or at the reformatory for women, such buildings as shall be needed for the proper care of such delinquents as shall be committed thereto.

If, in the opinion of said board, it shall be expedient to establish an institution for such delinquents apart from either of said reformatories, and in place of such departments, they may construct said buildings upon land obtained as hereinafter provided. If such buildings are so constructed, the institution shall be known as the Colony for Defective Delinquents, and persons may be committed thereto, held therein and released therefrom in the manner provided in said chapter for the commitment to said department, and for the custody and release of said persons.

For the purpose of carrying out the provisions of this act, said commissioners, with the approval of the governor and council, may purchase or take, in behalf of the commonwealth, land for said departments or said colony, but the expenditure for land

so purchased or taken shall not exceed thousand dollars. The expenditure for the construction and equipment, ready for occupancy, of buildings constructed as aforesaid, shall not exceed thousand dollars. So far as shall be practicable, the work of construction shall be performed by the labor of prisoners held in the Massachusetts Reformatory. There shall be paid to the reformatory, for such labor, such sum as shall be fixed by said commissioners, with the approval of the governor and council.

The plans for buildings to be erected under the provisions of this act shall be subject to the approval of the state board of insanity and of the governor and council.

The expenditures for carrying out the provisions of this act shall be paid from the prison industries fund.

The above bill was reported upon favorably by the Legislative Committee, after a hearing and the representations of those interested, but when the bill got as far as the Ways and Means Committee it was rejected, on May 5, 1916, nearly at the end of the session, on account of the expense involved.

An attempt is going to be made next winter by those interested, joining with the Prison Commission, in urging the passage of a bill much along the same lines. Mr. Randall has resigned as Prison Commissioner, owing to ill health. His successor, Col. Cyrus B. Adams, until recently Superintendent of the Massachusetts Reformatory at Concord, authorizes me to quote him in saying that he is firmly of the belief that the class of so-called defective delinquents must be segregated in buildings by themselves and there classified into different groups; the same treatment cannot be applied to all, and he says that they must not be connected with or on the grounds of either prison property, insane hospital or reformatory of any kind, and that they should have medical care.

A plan along the following lines, I believe, should eventually be carried out:

A building, or number of buildings, should be erected where this group may be individually studied according to their various medical, educational or re-educational requirements. It should not have any title suggesting hospital or custodial treatment, but might be called a school or training school. It should, however, be under expert medical supervision. The organization should also include one or more psychological and vocational experts and social workers, and pathologist. There should be well equipped laboratories, a department where the three R's, ethics and hygiene are taught, with classes for languages, music, etc.; departments of trades, craftsmanship and domestic arts, where may be taught carpentry, cabinet work, carving, masonry, brickmaking, tile and cement work, plumbing, electrical work, shoe-making, tailoring, printing, farming, dressmaking, cooking, canning, preserving, laundry work, etc.; a department of occupational therapy,

where a certain small group, incapable of continuous effort in any one direction, may be employed in various handicrafts, according to their therapeutic needs, such as basketry, weaving, lace-making, rug braiding and hooking, pottery, etc.

A school of this kind should be able to graduate into the community a number of its pupils each year, who should then be under the supervision of the social worker. There will be many who may never graduate, but every one of these defectives, however anti-social, should be given an opportunity to prepare himself to go out into the world and make good.

There are many who in our judgment, as far as we have progressed, may never be able to take any place in the community, but this does not mean that there is not a large group, maybe a larger group, who are capable of good work, showing marked ability in one direction or another, though it is often misapplied.

The "defectives" are creatures of habit to a great extent. They individually think along the same lines; one is always stealing things, another setting fires, another immoral, etc. A careful study of the individual would probably lead to a selection of an occupation or trade as an avenue which would take that person out of chaos into a useful and happy life. Most of them have never had a fair chance. They cannot compete with the normals, and have been knocked from pillar to post, shut up without any intelligent effort being made to direct their energies to something that is more vital to them than even their mischief and misconduct, punished in prison and out of prison because they would not work at what may be most distasteful to them.

Some have undoubtedly been born without any moral responsibility in their make-up, and a very large number have been warped by environment. Is it right to punish these mortals? It may be necessary to give them custodial care but our responsibility does not end there. To be sure, we should thus have protected the public, but in making a man do a certain stunt or piece of work daily in an institution, we make him into a producing machine, but we may not have done anything for him individually. Surely, in this enlightened age, these handicapped individuals are entitled to as much of our time and effort as our normal children, and we should give them a great deal more if they need it.

But after all, the trend of all modern work in criminology and psychiatry is becoming preventive rather than merely curative. Steps should be taken and laws passed to prevent an increase in our present defective population through immigration, by stopping them at our ports of entry. A careful yearly psychological examination in the schools would detect many of these defective types before they have become delinquent, and proper measures should imme-

diately be taken for treatment or adjustment to a suitable environment of these early cases.

A great assistance in the preventive work, especially in the early discovery of defectiveness, are and will be the laboratories and the consultations with specialists in the training schools. The laboratories will first scientifically examine the body at large, note the stigmata, and the variations in the relative size of the organs, and with the assistance of the x-ray note especially the size of the heart and pituitary, the bones and their development, estimating the osteological age, and eliminating syphilis, tuberculosis, and especially congenital syphilis, which often can be shown by an x-ray of the bones when other tests are negative. A study of the glands and their secretions, and blood and Wassermann tests should also be made, and psychometric and psychonological examinations and psychological studies, including studies of the emotion and will.

Every State should provide special units for the care and treatment, both educational and medical, of this so-called "defective delinquent" group.

Original Articles.

WHAT THE STATE IS DOING FOR THE SYPHILITIC AT THE STATE INFIRMARY AT TEWKSBURY, MASS.*

BASED ON A SURVEY ON SYPHILIS AND GONORRHEA AT THE STATE INFIRMARY.

By MISS ORA MABELLE LEWIS, BOSTON.

Social Worker, South Medical Clinic for Syphilis, Massachusetts General Hospital, and Auxiliary Visitor to the State Infirmary.

You'd better go to Tewksbury! has rather a familiar ring to many in this audience. How few of you have realized until today what going to Tewksbury means! I am sure your attitude has always been that of Emerson's traveller. You may remember he states in his "Considerations by the Way"—"There are three wants which never can be satisfied,—that of the rich who want something more; that of the sick who want something different; and that of the traveller who says 'anywhere but here'." Anywhere but here—the last place on earth—and that in truth is what the State Infirmary has come to mean in the minds of many people, physicians, social workers, and even patients themselves.

This attitude of mind results not from any inherent fault of the administration of the institution, but rather through a thoughtless or careless use of the institution by those of us who

have not ascertained what the State Board of Charity and the State Infirmary Trustees are equipped to do for the people at the State Infirmary. Few of us realize the demands made upon the institution, or feel any responsibility in supplementing the work done there, until such time as revision of certain statutes shall provide for out-patient rather than institutional care for certain groups of people—especially syphilitics, now sent by law to the State Infirmary—or until the enlargement of the field of medical social service under the State Board of Charity makes it possible to administer to the social needs of more people coming under its jurisdiction at the hospital.

The size of the Infirmary problem in all its aspects is tremendous both from point of view of administration on the one hand, and social-medical segregation on the other. The report of the Trustees of the State Infirmary for the year ending Nov. 30, 1915, shows the admission of 7244 persons. The largest number in the infirmary on any one day was 3107. Of the 7244 total cases cared for, 324 were known to be syphilitic. Many others in the medical wards undoubtedly had at some time been syphilitic.

Before telling you exactly *what* is being done for the syphilitic here, let me tell you some of the reasons *why* it is being done. Those reasons fall quite decidedly into three groups. First, certain statutes which must be obeyed; second, lack of other hospital facilities for the medical care of the acutely sick syphilitic; and finally that many social workers send people to the State Infirmary as a last resort.

First, the laws, influencing directly or indirectly the treatment of the syphilitic at the Infirmary. It is the duty of the overseer of the poor of any town or city to provide for medical care of any indigent person falling ill within their town or city. It is fair to assume that any such person will have first sought care from some private source before he makes application for care as a public charge. Unfortunately, the resources offered individuals for treatment for syphilis by charitable institutions are very limited. The same is equally true about opportunities for hospital treatment as maintained by towns and cities. This in face of a Statute (Sec. 41-42; Chap. 365, Acts of 1906) which decrees that every town and city in the Commonwealth shall provide for the care of indigent persons suffering from syphilis and gonorrhoea. Now this law works in two ways. Sometimes the overseers of the poor decide that the most economical way out for them is to send the patient to the State Infirmary and reimburse the State the amount of \$3.50 per week, all salvarsan, medicine, and one-way transportation thrown in.

By the other method, the patient is sent to some nearby out-patient department. As much is gotten free from the hospital as possible, and then the overseers of the poor say they will pay

* Read before the Boston Conference on Illegitimacy and representatives from the State Conference of Charities and Corrections, at the State Infirmary, Tewksbury, Mass., Oct. 25, 1916.

for special medicine only up to a certain amount. In every case within my experience, it has been the overseer and not the physician who has given the order to cease further medication.

It goes without saying that unless the physician and not the overseer of the poor is to be the one to judge when treatment shall be stopped, then from the point of view of both patient and community it is better to have the patient go to the Infirmary at Tewksbury. Once there we know he will get good, intensive medical care, and will not be returned to the community until no longer infectious, or until symptoms are relieved. But this arrangement is not fair to the patient if by so doing he is kept from work, and it most certainly is not fair to the State. The State has enough to do to care for those who have legally no other haven of refuge. The towns should not add to this burden. It is true that some of these patients could not receive hospital accommodations elsewhere because of limited facilities, but many of them could have been cared for as out-patients. You should remember that we have a statute which should come to our rescue at just this point and it is our duty to make use of it on every possible occasion and help thereby to ease up on the burden on the Infirmary. I refer to that statute which reads: "No out-patient department connected with any hospital supported in whole or part by taxation, may discriminate against the care of any patient suffering from syphilis or gonorrhoea unless a special ward is provided therefor."

Do you all know what would really happen to a person suffering from syphilis who is unable to employ a private physician, who has no legal settlement in any city or town, and who—finding no dispensaries in his locality—is obliged to apply for public assistance? First, should there happen to be a hospital in the vicinity which would be willing to receive such a patient, the Commonwealth would be unable to reimburse the city or town or local hospital because the law provides that the reasonable expense incurred by city or town shall be reimbursed by the Commonwealth *only until* such time as the sick person is able to be removed to the State Infirmary at Tewksbury, and practically all cases of syphilis are in such condition that they can be removed without endangering their health at the time of application for treatment. Under the law the Commonwealth cannot deal with private hospitals or individuals. Its business must be done only with overseers of the poor, or boards of health.

One more group of syphilitics is sent to the Infirmary under the existing statutes, again increasing the burden to the Infirmary, but more than repaying the community, and indirectly the State, by protection of individuals from the spread of infection. I refer to the syphilitic who is a real menace to the community because he is infectious, and being either alcoholic,

ignorant, reckless, mentally below par, or possessing any one of a dozen other characteristics, we know he cannot be trusted to protect the community while treatment is being carried out.

Syphilis is not on the list of diseases known as "Dangerous to the Public Health" and most of our laws for restraint of sick individuals who are infectious specifically mention them as "Diseases Dangerous to the Public Health" in the statutes. But we have one statute which in its broad interpretation allows us to include syphilis and gonorrhoea in infectious forms. It is a blanket phrase in the so-called "Smallpox law" (R. L. 75; Section 46, as amended by Acts of 1902-206, August 1915:12) "... An officer under the direction of the Board of Health may remove any person who is infected with a contagious disease." (Syphilis and gonorrhoea are admittedly at times most contagious.) Once removed by an officer of the law, the patient becomes as a prisoner in the eyes of the law, and as such can be kept at the Infirmary until no longer infectious. A statute definitely states that inmates of a penal institution afflicted with syphilis shall remain therein until in the opinion of the physician in charge the inmate is no longer infectious.

The first group of syphilitics at the Infirmary comprises, I repeat, persons sent in by the towns and cities where they had settlements. This group certainly should not be sent to the Infirmary.

The second group, not a large number but extremely important, is made up of persons who are a menace to the community and who having been sent to Tewksbury by some health official are being intensively treated and not sent back into the community until the danger of infecting others is past. This group of patients should go to the Infirmary, and we should be very grateful for the opportunity to send them, and for the intensive medical treatment they receive.

The third group comprises quite a large proportion of the syphilitics at the Infirmary. Those who just go there because they are sick, have no money, and know of some one who has been "cured" (to use their own term) at the Infirmary; they know they can get good treatment, and get it free. Most of these people can claim neither settlement nor citizenship. To these the Infirmary is certainly a haven of refuge.

Finally, the fourth group is the one which should be of especial interest to us as social workers. Some of them have been sent to the Infirmary by private physicians, some by hospitals and dispensaries, many by trained social workers. We cannot blame private physicians for lack of knowledge of community resources, and it is quite consistent with their desire to see the person get proper medical treatment, that we find them sending the indigent syphilitic to the Infirmary. These physicians use the

Infirmiry as their first resort—social workers as “their last.”

Now you all know as well as I do that in most instances, you as social workers send people to the Infirmiry for one of two reasons: either because you are under too great pressure to formulate a definite plan, or because every scheme thought out and tried has been a failure. The situation is sized up as hopeless and to the Infirmiry goes the patient.

Three cases immediately come to my mind. In using these I do so with all appreciation of the conditions which caused those interested to send these patients to the Infirmiry. Every case I mention will be known to some one in this audience and I use them for a constructive purpose and not to criticize.

CASE 1. An Italian, over 50 years of age, in this country two years, speaks no English. Under treatment at a large local hospital for nine weeks. The hospital, for acute cases only, could keep the man no longer, but recommended further hospital care and called upon the Social Service Department to help make such arrangements. Before doing this, the Social Service Department felt a home visit necessary, and, because the patient lived in another city at some distance from the hospital, a local social agency was asked to visit. The visit was made (and, as it developed later, made by an inexperienced worker). The report of this visit was most unsatisfactory. Home conditions said to be very poor—just a shack which laborers on a nearby railroad had once used as temporary quarters. On the strength of this report home care seemed impossible and all hospitals for “chronics” had the usual long waiting list. The Infirmiry seemed the only possibility. The diagnosis in this case was late syphilis, either with involvement of the spine or complicated by tumor of the brain—a serious problem at best.

When the patient had been at the Infirmiry for some time, the State Board of Charity took up the question of deportation. This plan was blocked by the inability on the part of the immigration officials to verify the patient's landing. While this was in process, one of our auxiliary visitors on syphilis and gonorrhea found some relatives and from them learned the patient's correct address which had been wrong at both hospitals. The patient's home was really excellent: suburban, good yard, large sunny rooms, no children in family. This home was in one of four suites in a brick apartment house owned by son. Home care with good medical supervision was easily arranged. An effort was made to have son realize the expense of his father's care at the Infirmiry, but he felt in no way to blame for his father's having gone there, and could see no reason for assuming payment.

This patient cost the State a goodly sum of money in board, medicine, and investigations. Poor social work and ignorance of Italian certainly were responsible.

CASE 2. A young Irishman, 28 years of age, in U. S. A. 6 years, very ill with secondary syphilis, applied to a local hospital for treatment. The hospital would give him salvarsan at \$5 per treatment, but could offer nothing else. The man did not have the necessary \$5, so he was referred to Social Service. No fund was available for payment of salvar-

san, and no plan of payment on installment plan suggested itself to the people in question. The man was sent to the Infirmiry as the only place where he could get his treatments for less than \$5 per treatment. A better knowledge of community resources for the treatment of syphilis, a willingness on the part of hospital administration to sell him salvarsan at cost, or a little ingenuity on the part of the worker, could all have joined hands to keep this man from Tewksbury. He had intensive treatment, and, through one of our visitors, later outpatient department supervision was arranged and carried out. At the present time he is saving up his money to pay back the State his expenses at the Infirmiry. His reason for this? He had taken out his first citizen's papers and, having been made a public charge will delay his becoming eligible for citizenship. By reimbursing the State for his board at the Infirmiry the public charge clause will be eliminated.

CASE 3. A young girl of 18 appeared at the outpatient clinic with a lesion on the lower lip. The physician thought it probably was syphilis, but said he could not be sure until he waited long enough for the disease to progress far enough to have a Wassermann test. He referred case to Social Service with advice that patient be sent to hospital for observation and as a means of protecting the community if it should be syphilis. (The girl was living in lodgings and eating in public restaurants.) This same physician thought the Infirmiry would be the only hospital available and, acting on that idea, to the Infirmiry she went. Now it happened that this particular girl was just wavering at the fork of the roads. A good deal of effort would head her right; a very little, wrong. She got mostly the things to help her go wrong: a girl with an accidental infection of syphilis sent into the only available bed in the Infirmiry hospital, the next patient to her on the one hand a common prostitute; the one on the other, one of the most repulsive specimens of womanhood I have ever seen. Is it any wonder that the combined efforts of our auxiliary visitors and a local social agency could avail little in combating these influences? The girl was sent home, but with lessons too well learned from her companions. The physician could have made his diagnosis, and the social worker could have demanded that before she took action.

So much for why the State Infirmiry is caring for so many syphilitics.

In “Adam Bede” we find this sentence—a very appealing one, it seems to me, and one which applies especially to all of us who are in any way connected with the Infirmiry. The people and the institution get a tremendous grip on us. Adam Bede tells me why. “Human nature is lovable, and the way I have learnt something of its deep pathos, its sublime mysteries, has been by living a great deal among people more or less commonplace and vulgar, of whom you would perhaps hear nothing surprising if you were to inquire about them in the neighborhood where they dwell.”

There is a pretty general impression among people at large that the people who go to Tewksbury belong to quite a distinct type of humanity—not at all like those to be found in other hos-

pitals, charitable institutions and almshouses—that they are in truth a “very poor lot.” The thought reminds one of the observations of old Mr. Gedge, the landlord of the Royal Oak in “Adam Bede,” when he summed up his opinion of the people in his own parish, and they were all the people he knew, in these emphatic words:—“Ay, sir, I’ve said it often and I’ll say it again, they’re a poor lot in this parish—a poor lot, sir, big and little.” Later our Mr. Gedge moves to a distant parish and goes out among the people in the market place. Oddly enough he has found the people of precisely the same stamp as the inhabitants of the parish where he previously lived, and he remarks, even more emphatically this time, “A poor lot, sir, big and little, and them as comes for a go o’ gin are no better than them as comes for a pint o’ twopenny—a poor lot.”

If you really feel that this is true of the people to be found under treatment in this institution, then you must feel the same way about individuals to be found in the wards of any charitable hospital, or under the care of any social agency. If you consider one group a “poor lot,” you should expand your group. Now this is no idle theory founded on loyalty to this institution which makes me so sure of my statement, it is a plain fact, a conclusion drawn after making a careful survey of a large group of syphilitics (and of all poor lots this group to most of you suggests the poorest) treated at the Infirmary in the first part of the year 1915. We not only studied and tabulated their social status and individual needs, but we took the same number of syphilitics under treatment in the Skin Clinic of the Boston Dispensary and also from the South Medical Clinic, Massachusetts General Hospital Out-Patient Department, at about this same period. Both their social status and individual needs ran along parallel lines more often than along divergent ones.

From the medical point of view the problems presented were almost identical in all three institutions. The same number of people with early or late or hereditary syphilis, and the same subdivisions in the more minute points of medical importance. Socially their ages were parallel, the relative proportion of men to women (3 to 1), of single and married, of native born and foreign born, of alcoholic or not alcoholic, and the various degrees of alcoholic excess. The geographical location of the patients in the various institutions varied just as one would expect from the people these institutions have always treated, and their occupations all had common factors. A few more waiters at the Dispensary, shoe workers at the Massachusetts General Hospital, textile workers at the Infirmary. These variances are quite easily explained, and are of no significance here.

The Infirmary, therefore, treats among its syphilitics not any larger group of potentially uneconomic people than these other hospitals, but the State being obliged by law to treat them

as hospital patients and not out-patients, we see larger groups at a time in the Infirmary wards, and this very fact increases our impressions; but for practically every case history you could present to us we could match you with one from the Infirmary, and the opposite procedure would be equally true.

Now briefly, let me tell you what the Infirmary is doing for all syphilities within its wards.

First, the Infirmary closes its door to none who may apply for treatment. There is no referring them along to some other place. They are all admitted, sometimes far beyond the limits of comfortable capacity. Every patient is given a physical examination and a Wassermann test if indicated, and if there are any indications for treatment, the applicant goes immediately into the hospital ward, and radical treatment is begun immediately. These patients receive several (generally 4 or 5) large doses of salvarsan (neo-salvarsan—606, or call it by the name most familiar to you), and these are given while the patient is in the hospital ward, and are given at just as close intervals as is feasible. Now large doses and oft repeated have a twofold purpose: The patients get a goodly amount of medication at once, which will have in many instances a very beneficial and sometimes lasting effect even if not augmented by later treatment after they leave the Infirmary. By repeating it often, the patient gets his allotment generally before he gets so uneasy and feels so well that he is anxious to go out. “Feeble limbs easily resign themselves to be tethered, and when subdued by sickness it seems possible to fulfill pledges which the old vigor comes back and breaks.” There is no assurance that the patient will continue treatment either in the Infirmary or out when the old vigor returns.

As soon as this radical course of treatment is completed, if all lesions are healed, or symptoms have disappeared, the patient goes from the hospital ward into the “House” there to await discharge.

Upon discharge the patient goes back into the community with no plans for further treatment or social betterment. One may hear if one listens intently a hint to the effect that such may not be necessary. One case may illustrate the fallacy of this argument. I am glad to say that we came upon the case in our retrospective study and therefore did not work it up for this occasion.

CASE K. Tony K., residence, Boston; settlement, none; age, 28; married; in U. S. A. 8 months; Polish; agency referred, not stated; occupation, waiter; discharged to Boston; number of dependents, wife; born in Poland; relatives, one sister, address given; length of stay in Infirmary, 22 days.

So much for social data. Medical findings and treatment carefully recorded. Mary K., his wife, repeats the items covered above, social and medical.

So far as can be judged, that is all the information available on the above family from the records

of the State Board of Charity. The medical record shows very intensive treatment for 22 days, and then discharge back into the community.

But the Massachusetts General Hospital knows more about this family, medically and socially, because a great deal more medical and social work has been necessary. As briefly as may be it will summarize as follows: (From medical and social records at the Massachusetts General Hospital, December, 1913, to August, 1916. Patients still under medical and social supervision.)

Man and wife, aliens, speaking no English, in U. S. A. eight months, married three months at time patients presented themselves for treatment. Both were working in a restaurant, he as porter, she as dishwasher. Diagnosis at Massachusetts General Hospital, "secondary syphilis." A brother-in-law was willing to assume financial responsibility of woman's treatment, but not of the man's. Home conditions extremely poor, with small children therein liable to become infected. At that time (December, 1913) there were no Massachusetts General Hospital beds available, and the State Infirmary was called upon to treat them.

The social worker at the Massachusetts General Hospital was able to arrange with the employer to have position kept open for man upon his return to the community. This was possible because he was an excellent worker and of value to his employer.

Both patients were admitted to the Infirmary on December 18, 1913. On December 19, 23 and 30, and January 3, 1914, patient received, respectively, neosalvarsan in .9 gm., 1.05 gm., and 1.2 gm., and 1.2 gm. On January 9 he was discharged out, *all lesions healed*.

The woman received neosalvarsan on practically the same dates, the amounts of each dose being, respectively, .45 gm., .6 gm., and .9 gm. She was discharged January 9. *Improved; lesions healed*.

So far so good. As you will see, these patients both received pretty strenuous anti-syphilitic treatment, the approximate cost to the State being \$20 for drugs and \$21 for board, a relative cost of \$41, not counting transportation.

Each patient was discharged with *lesions healed*, and they have *not* returned to the *State Infirmary* for further treatment. That would all be most satisfactory could we stop there, but the subsequent out-patient department record at the Massachusetts General Hospital is most significant.

Mary, wife, presented herself again at the Massachusetts General Hospital out-patient department on February 2, 1914, a little less than a month after her discharge from the State Infirmary. From then until July, 1915, a period of 17 months, she made 40 visits to the out-patient department (none of them unnecessary) having at various times active symptoms and receiving anti-syphilitic treatment—more salvarsan, intramuscular treatments of mercury.

In January, 1915, she gave birth to a seemingly healthy child, always well nourished, but later showing mucous lesions needing treatment. At the present time, August 1, 1916, the baby is in good physical condition, but under careful supervision. Mother is again pregnant and is receiving salvarsan both for her own sake and for the sake of the coming child.

The reaction of the man to this first child's condition may be interesting. Had the baby shown any damaging traits of inherited disease he had threat-

ened to kill the wife, blaming her entirely for what happened *after treatment*.

The husband's story is no less interesting and significant than the wife's. You will recall that he was discharged from the Infirmary, "all lesions healed." The husband presented himself at the Massachusetts General Hospital out-patient department on February 2, the same day as his wife; a little less than a month after their discharge from the Infirmary. He made six visits from February to June of that year, with no active lesions but a general feeling of illness. In early June he came with very infectious recurrent lesions and really very ill. From June until December of that year he made nine trips to the Massachusetts General Hospital, receiving active treatment. From December, 1914, until July 1, 1916, a period of eighteen months, this man has paid 23 visits to the out-patient department, and has at times been most infectious and has received a great deal of expensive treatment. Now this is not hopeless by any means, because we can keep that man under supervision until he no longer has these recurrences, and by so doing we are able to keep him from any damaging handicaps and also to keep him from spreading his infection.

Not all cases need such long supervision, but there is nothing in medical science or social either to justify our believing that a few weeks of intensive medical treatment is enough in these cases either from a medical or social point of view. Everything medically will be done for these patients at the Infirmary that can be done in the short time the patients are willing to remain at the Infirmary. No out-patient care by the State can be made under the existing statutes. The careful supervision of these patients in large groups from certain out-patient departments under medical social service justifies us in believing that there is still much to do after the patient with either syphilis or gonorrhea leaves the Infirmary. A social worker, under the Department of Adult Poor, State Board of Charity, is just starting a plan to supervise the care of syphilitics after discharge from the Infirmary. But even then there will still be much for everyone of you to do to help us realize our aims, which should be now and always, *cure of the individual and protection of the community*. It can be done by everyone working together and not leaving the real work to be done by a chosen few while others are content to ask for new legislation for these people. Send these people to the Infirmary if they are too ill to be ambulatory patients in an out-patient department and you can make no other hospital arrangements, but make a note of that fact as a basis for future extension of hospital service for the syphilitic.

Keep them as out-patients if you can, using your ingenuity to keep them in the community and at work as much as possible. This can be done by careful medical and social supervision for most of these patients. Do not join the group of people in the community who recommend the Infirmary to a patient just because he is syph-

ilitic and for no other reason. Do not send a mother with a syphilitic baby to the Infirmary because it is syphilitic unless you have other reasons as well. Get an expert opinion on the medical situation and see if some other arrangement cannot be made. I often hear, "But what can I do? I can't get anyone to take this mother and baby." The answer is generally the way the matter is put up to the prospective recipient of the charge. Sometimes it results from ignorance and sometimes from prejudice, which should be overcome.

You are beginning to wonder just what all this has to do with illegitimacy and why we should be laying, at this time, such emphasis on what the Infirmary is doing for the syphilitic.

The relation of syphilis to illegitimacy has a twofold interest: First, in that a goodly proportion of illegitimate children are also syphilitic. One set of statistics, compiled quite accurately in a lying-in hospital in St. Louis, gives the relative amount of syphilis among illegitimate and legitimate children as 6 to 1. State Infirmary visitors will agree with me that among their mother and baby cases there are more than an appreciable number of such children. Statistics from the Infirmary would not be a fair estimate of the problem as such, because in many instances if the presence of syphilis is known or suspected in the expectant mother, away she goes to the Infirmary with all possible haste. The other reason for correlating syphilis with illegitimacy is because it is often only accidental that pregnancy and not disease is the fruit of indiscretion. Much is being done far and wide for the unmarried mother. She receives sympathy and kindness and care. Practically nothing is being done for the diseased girl. She is scorned, looked down upon and considered far outside the pale of human charity. She needs more sympathy, more kindness and charity than any individual I know. The baby proves the salvation of many an unmarried girl; disease the curse of many another just as worthy of salvation.

With his practised grip of the patient's pulse, the doctor receives, through his sense of touch, in answer direct from Nature to his enquiries as to the tension, frequency, rhythm, volume, form and also as to the condition of the blood vessels.

In order to enable him to express in exact and unvarying terms the facts thus directly apprehended by his sense of touch, the examining doctor has at his disposal various instruments of precision.

Just as the second-hand in the watch measures and expresses in terms of time measurement the frequency of the pulse, so does the sphygmometer measure the degree of the pulse's tension, and expresses in terms of weight the amount of the pressure which acts from within on the walls of the artery and prevents them from shrinking and approaching one another. This pressure is the pressure of the blood in the pulse artery.

Provided that the heart and the walls of the blood vessels are free from organic defect, and provided the chemical condition of the blood does not deviate beyond a certain limit from the normal, the pressure of the blood in man is always the same, though with minor transient variations within narrow bounds, under the influence of temporary causes, the cessation of which restores the blood pressure to the normal.

The norm of the blood pressure in the radial artery is 150 mm., or approximately that figure, and vasomotor tranquillity at normal blood-pressure level prevails when no disturbing factor is operative.

If, on the other hand, the chemical condition of the blood is altered by the absorption of certain substances which are foreign to it, or by the quantitative increase of some particular substance, which has the right to be in the blood only in a small amount, the dynamic action of the blood on the wall of the blood vessel, or on the nerve apparatus of the vessel and on the heart, is thereby likewise altered. To such alteration in the dynamic character of the blood the vasomotor mechanism responds in different ways, according to the different nature and degree of the dynamic irritation and the different irritability of the vasomotor mechanism. Thus arise disturbances in the pressure of the blood, the level of which is subject to fluctuations.*

Vasomotor unrest in different levels of blood pressure, proceeding from the same causes as have been above stated, is a common occurrence in the insane, as I shall proceed to show in this article.

* Cf. Cybulski's experiments: Blood taken out of the supra-renal vein caused, on intra-venal injection, the same effect as supra-renal extract. As the result of such injection a considerable increase of the arterial pressure was observable. This increase in pressure is caused first and foremost by a contraction of the small and most minute arteries. As this contraction is also exhibited after cutting through the corresponding nerves, as well as in a frog with an undisturbed nervous system, it must be caused at any rate to a great extent, by a direct action of the adrenaline on the muscles of the vessels. According to Cyon, the nervous centre of the blood vessels in the medulla oblongata is also operative.—Quoted from R. Tietze's: *Lehrbuch der physiologie des Menschen*. Leipzig, 1913, B. p. 337.

ON VASOMOTOR UNREST IN THE INSANE: STUDIES BASED ON 20,000 MEASUREMENTS OF THE TENSION OF THE RADIAL PULSE IN 250 CASES OF VARIOUS FORMS OF INSANITY.*

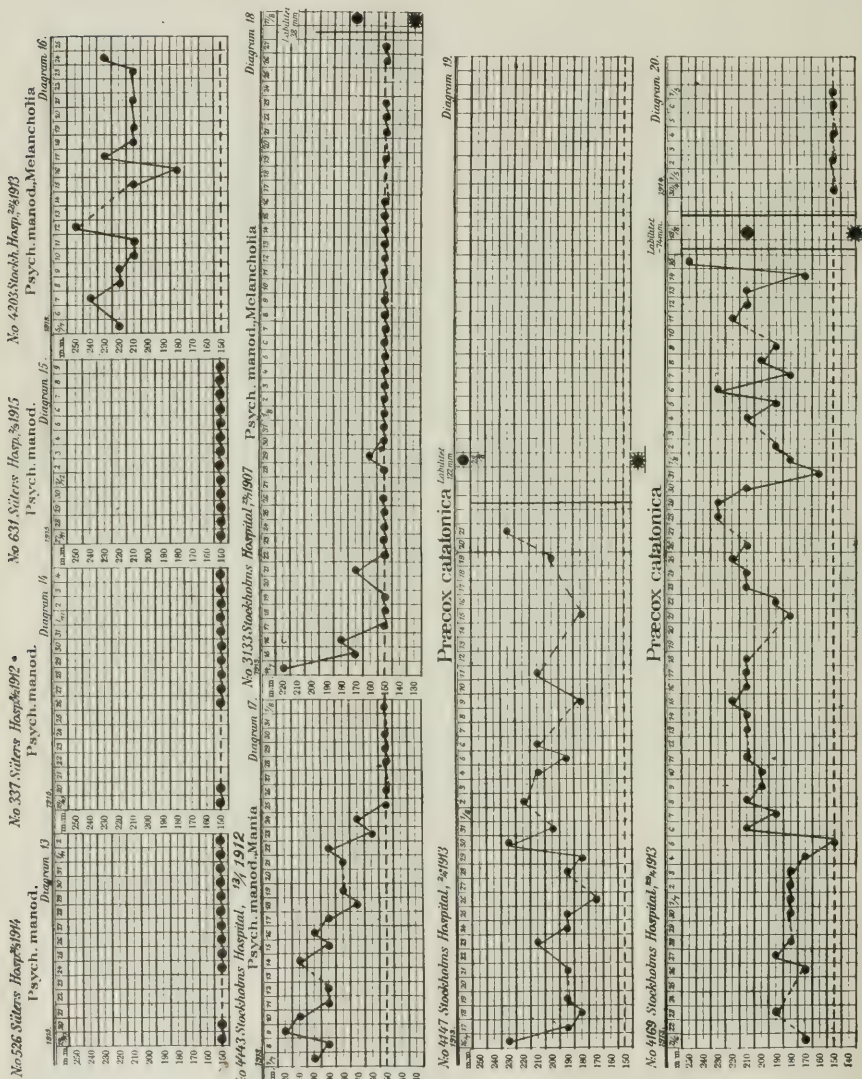
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(Summarized Transcription.)

SPHYGMOMETER.

FEELING the patient's pulse is by far the most common proceeding in medical examination.

* A communication on this subject by the same author appeared in the *Zeitschrift für die gesamte Neurologie und Psychiatric*, Band xxiv, Heft 5.



BLOOD-PRESSURE CHARTS, SELECTED FROM 200 CASES.
13, 14, 15, Remission of manodepressive psychosis; 16, Convalescence from melancholic phase; 17, 18, Incipient remission of melancholic phase; 19, 20, Vasomotor unrest in hypochondria in præcox.

The sphygmometer, used as an instrument of investigation, is sensitive to these variations in the blood pressure, even to quite delicate shades, and expresses the amount thereof in terms of weight. In this way the sphygmometer reveals the presence in the blood of substances which are foreign to it in normal conditions; it responds to changes in the chemical condition of the blood, and these changes can be read off on the sphygmometer, in so far as other causes inducing variations in the blood pressure can be eliminated at the time of the examination.

(The evidence upon the strength of which the norm of the blood pressure in the radial artery is stated to be 150 mm. Hg., or approximately that figure, is presented and discussed in an article, "Critical Comparison of the Values Obtained in Clinical Determination of the Blood Pressure with Different Methods" and "Studies on the Liability of the Blood Pressure in the Insane" (in preparation). Cf. also the author's articles on the subject in *Münchener medizinische Wochenschrift*, No. 29, 1912, and *Nordiskt Medicinskt Arkiv*, 1912, ii, 4, No. 13.)

VASOMOTOR UNREST IN THE INSANE.

The investigation, the result of which forms the basis of the present studies, has been carried on in the Stockholm Hospital¹ from June 1, 1913, to October 20, 1914, and from November 1, 1914, in the Säter Hospital,² where my investigation is still continued.

The measurements of the tension of the radial pulse have been made, ordinarily, during the hours next before a meal; for particular purpose in some instances, after a meal. The investigation has comprised cases of the following forms of insanity: manodepressive, precoc, dementia paralytica, insania epileptica, insania hysterica, insania neurasthenica, psychosis presenilis, paranoia chronica, psychosis a intoxicatione, dementia organica, dementia senilis, imbecilitas.

In these forms of insanity (in imbecility during periods of affectivity disturbances) the blood pressure is subject to frequent alterations between higher and lower values, oscillating about middle values, which may be higher or lower than the normal blood pressure or approach the latter. The highest value of the tension of the radial pulse which I have observed is 320 mm. Hg.; the lowest measurable is 70 mm.

In the present communication the phenomenon mentioned is referred to under the term of "vasomotor unrest in various levels of the blood pressure," existing during the acute and the subacute periods of mental diseases.

A more tranquil blood pressure, at a level which more approaches the normal blood pressure value, predominates after the psychic symptoms have begun to improve.

My observations regarding the vasomotor unrest in the insane do not furnish reasons enough to call for any declaration of opinion on my

part regarding the causes and origin of insanity.

My observations give evidence in support of the view regarding the causes of the vasomotor disturbances which I have indicated below.

The diagram over the disturbances and alterations of the blood pressure, which is obtainable by daily making records of the value of the blood pressure in the radial artery on a scale of centimeter horizontals, reflects in a measure the variations of the psychic symptoms during the evolution of the disease. In some instances it aids in forming opinion regarding the prognosis. In different groups of diseases the blood pressure diagrams show various differences, some of which may even be characteristic. However, they are not sufficiently clearly differentiated to allow the diagnosis to be based upon them.

VASOMOTOR UNREST IN THE MANODEPRESSIVE GROUP.

1. Characteristic of this group is vasomotor unrest at hypertension level, continuous within certain periods of time. That is to say, that the blood pressure in radialis is subject to frequent alterations between higher and lower values about a middle value which always is higher than 150 mm. Hg. This alterability ceases after a period of time, briefer or more prolonged, as the case may be.

2. When the vasomotor unrest ceases, vasomotor tranquillity sets in. Whenever this occurs, the disease has either run its course or it is altered.

3. The disease has run its course, a remission of shorter or longer duration has begun or health is restored, in so far as the vasomotor tranquillity establishes itself at normal blood pressure level, which in all instances of adults, in male and female, is 150 mm. Hg., or approximately this figure.

4. Supposing a renewed attack of manodepressive disease breaks out, then the vasomotor tranquillity is instantly upset, and vasomotor unrest in hypertension values commences to develop and continues without interruption until a new remission or health sets in, and with it vasomotor tranquillity at normal blood pressure level.

5. In some instances it occurs that the vasomotor unrest ceases and vasomotor tranquillity sets in without the blood pressure simultaneously attaining the normal blood pressure level. The vasomotor tranquillity may set in at the level of, for instance, 210 mm., 230 or 250 mm., or any other hypertension value. This is a chimeric vasomotor tranquillity. It is labile blood pressure; it is subject to alterations by causes which may be met at any time. In some instances it occurs as a transitory intermedial stage, and is subsequently followed by remission with vasomotor tranquillity at normal blood pressure level.

(In another group of mental disease, dementia

organica, I have observed a case, No. 4226, Stockholm Hospital, male, 52 years, presenting vasomotor tranquillity at a blood pressure level of 230 mm. Hg. After about six weeks, vasomotor unrest began to develop, with gradual rise of the blood pressure, reaching 320 mm. Hg., and then sudden collapse through cerebral hemorrhage, with mortal issue.)

As regards particular cases of the manodepressive group, the following has come under my observation:

1. Maniac cases in young individuals develop a higher blood pressure level than depressive cases of the same age, but even the latter develop hypertension values, *i.e.*, higher than 150 mm. Hg.

2. I have found the blood pressure level in men to be somewhat higher than in women at a similar run of the symptoms.

3. In depressive disease the blood pressure level is higher in middle-aged individuals than in younger ones.

4. Even in young persons mania runs its course with a simultaneous high blood pressure level; and enormously high blood pressure values, up to 320 mm. Hg., may occasionally be found.

5. The lability of the blood pressure in this group is of high degree, but changeable.

During periods of remission, when vasomotor tranquillity at normal blood pressure level prevails, the lability of the blood pressure is considerably diminished or, in other words, a relatively stable blood pressure is found.

More detailed observations regarding the tension of the radial pulse in the manodepressive disease must be omitted in this summary.

VASOMOTOR UNREST IN THE PRECOX GROUP.

1. The tension of the radial pulse in precox is characterized by continuous vasomotor unrest at hypertension, hypotension, or middle level.

2. The blood pressure in precox presents by far more numerous variations than in the manodepressive group. These variations cannot be adequately described by any generalized formulas; they reflect in a measure the variations and alterations of the psychic symptoms during the evolution of the disease. In the blood pressure diagram one may find guidance in forming opinion regarding the prognosis in some cases. Development leading to mental defectivity and dementedness produces blood pressure diagrams different from those of an evolution leading to remission and health.

3. The blood pressure in precox is labile in high degree. After the acute period is passed, when the changeable symptoms have run their course, and in older chronic cases, one meets, not rarely, with a lesser degree of lability of the blood pressure.

4. Out of 157 cases of precox, the radial ten-

sion of which I have examined before the exit of the year 1915 (herein not counted precox of periodical type), I have found only one case which for a brief period (about a week) spontaneously presented vasomotor tranquillity at normal blood pressure level. In the manodepressive group, out of 24 cases examined, I found 16 cases which presented periods of remission with vasomotor tranquillity at normal blood pressure level; and it is probable that the remaining 8 cases, or the majority of them, should have spontaneously exhibited the same result if the observations had been continued until remission in the psychiatric symptoms had been established.

5. In the particular instance of a given case, the vasomotor phenomenon, as a rule, does not offer sufficient support for a differentiation between precox and the manodepressive group.

6. However, one essential characteristic is found which differentiates the two groups,—the manodepressive and precox. It may be described as follows:

(a) In the manodepressive group, the psychic symptoms having run their course, when remission has entered or health is restored, the vasomotor unrest subsides spontaneously and vasomotor tranquillity at normal blood pressure manifests itself.

(b) In the precox group, on the contrary, the vasomotor unrest is continuous without time limit through periods of remission with vasomotor tranquillity (exception for periodical precox, as indicated above).

7. In precox, depression and anguish, as well as wrath and violence, do not necessarily determine the blood pressure to either hypotension or hypertension, but they are connected with a distraction of the vasotonus away from the normal blood pressure level.

In precox I have observed depression and anguish at 180 to 280 mm., and at as low as 90 mm. or lower; they become gradually less frequent as one approaches the level of the normal blood pressure. At a spontaneous blood pressure between 130 and 170 mm. Hg., I have never seen anguish and rarely depression in precox, if not of a very moderate degree.

In precox I have observed wrath and outbreak of violence at blood pressures of 220 to 320 mm., as well as at 90 mm. Below 220 mm. and above 90 mm., they appear to be gradually less pronounced the more one approaches the normal blood pressure level.

At a spontaneous blood pressure between 130 and 170 mm. I have not as yet witnessed an instance of wrath or violence in precox. These observations do not refer to old chronic and demented cases, in which the vasomotor mechanism in many instances appears to be sluggish and not to react before affectivity disturbances, as do the acute and subacute cases.

8. In some cases of stupor (catatonia), I

have found so low a blood pressure that, outside of the institution for the care of the insane, I have met the like only in instances of collapse or during agony. Yet this low blood pressure (90 to 70 mm.—immeasurably low) may continue for days, for weeks or months, nay even year after year. Only at intervals of different length (a week, less or more) a brief ascent of the blood pressure takes place, it reaching higher hypotension values or low hypertension values, whence it soon descends, and after a day, less or more, one finds again the same very low blood pressure as before the ascent.

If it should happen that the blood pressure increases and spontaneously continues for a week or more to be near the level of the normal blood pressure, then it may be expected that the stupor soon dissolves, and that the patient wakes up and begins to move about.

Certain other cases of catatonia may present stupor condition associated with vasomotor unrest in hypertension level (210-250 mm. Hg.). These cases run a different course from the former, but when the blood pressure decreases and approaches the level of the normal blood pressure and spontaneously continues so for a week, less or more, it may be expected that the stupor soon dissolves, and that the patient wakes up and begins to move about.

9. Catatonic stupor, with vasomotor unrest at a blood pressure level so low that it equals the blood pressure of collapse or agony, in persons that are not insane, may, as stated above, continue year after year; yet one may have to witness some day the recovery of such a case. However, before I have had opportunity to witness the recovery of one case under such conditions, I have witnessed the death of several of this class by some intercurrent disease (pulmonary tuberculosis or "schluck-pneumonie").

10. At a spontaneous blood pressure between 130 and 170 mm., I have never yet found a case of catatonic stupor.

11. A multitude of cases of precox run their course with a continuous vasomotor unrest at high (210-250 mm.), or enormously high (250-320 mm.) blood pressure level, or at a low hypotension level (90-110 mm.). If they so continue without interruption through a year or more, and without improvement of the psychic symptoms, a time comes sooner or later, when it is deemed expedient to transfer a majority of these cases from the hospital to the asylum for the chronic insane and demented.

VASOMOTOR UNREST IN OTHER FORMS OF INSANITY.

Beyond cases of manodepressive disease and precox, I have similarly examined the tension of the radial pulse in cases belonging to the other forms of insanity mentioned above. In all these forms of insanity is found vasomotor unrest at different blood pressure levels during the acute and subacute stages (during affective

disturbances in imbecility). When the psychic symptoms improve, a relatively more tranquil vasomotor condition generally develops in blood pressure values, which more approach the normal blood pressure level, at least in a great proportion of the cases. The characteristic features of the vasomotor phenomenon in each of the diseases mentioned must be omitted in this summary.

CAUSES OF THE VASOMOTOR UNREST IN THE INSANE.

The evidence of the observations on the tension of the radial pulse, which I have accumulated, supports the following assumption: the vasomotor unrest in the insane is determined by somatic as well as psychogenous causes.

1. On the one hand, the dynamic character of the blood is altered by the presence in the blood of substances which are foreign to it, by their kind or by their amount,—substances which act as vasomotor irritants. To these the vasomotor mechanism reacts by increased contraction of the peripheral arteries; in other instances, less often, by dilatation. By the increased contraction of the small and most minute arteries, the blood pressure is increased (as is known, it is decreased by the dilatation of the same arteries).

2. On the other hand, the blood pressure in the insane is influenced by psychogenous causes: false ideas, visual and auditive hallucinations, irresistible commands, psychomotoric impulses, hypervigilance, strained attention and efforts of will, but, above all, the level and strength of the affectivity impress their stamp upon the vasomotor diagram very much like the grip of the finger upon a vibrating cord. From psychogenous causes the blood pressure may be increased or decreased, depending upon various circumstances.

In particular cases of insanity, causes of vasomotor disturbances may be operative, which differ from those mentioned, as, for instance, heart disease, tumors, adiposity, infection and other anomalies. However, they possess only subordinate significance in this connection. Not a single case of heart disease, recorded in the case-journals, has entered in the casuistic material, which forms the basis of the present investigation. In connection with by far the greatest majority of the pulse measurements recorded, the temperature has been within normal bounds.

CAUSES OF THE DIFFERENCE BETWEEN THE VASOMOTOR PHENOMENON IN THE MANODEPRESSIVE GROUP AND THE CORRESPONDING PHENOMENON IN PRECOX.

The material of observations which I have accumulated regarding the vasomotor phenomenon in the two groups mentioned, gives evidence in support of the following assumption:

1. In the manodepressive group the physiological means of defence against substances foreign to the blood are sufficiently affective to the purpose of spontaneously restoring normal dynamic character of the blood after more or less time. Therefore, the vasomotor unrest ceases and vasomotor tranquillity at normal blood pressure level reestablishes itself.

2. In the precox group, on the contrary, the physiological means of defence against poisons manufactured within the organism are insufficient and unable to restore the normal dynamic character of the blood. In consequence thereof, the vasomotor unrest is continuous, without time limit. To this exception is made by the periodical type of precox, in which the vasomotor phenomenon is characterized by periods of vasomotor tranquillity at normal blood pressure level during periods of remission in the psychic symptoms, just as it is found in the manodepressive group. Such remissions are in some cases of very short duration.

EFFECT OF TREATMENT UPON THE VASOMOTOR UNREST IN THE INSANE.

I have found that during periods of a relatively more tranquil vasomotor condition, the receptivity and responsiveness of the insane to psychotherapy and pedagogical influence (working therapy, etc.) is markedly increased in a majority of the cases observed in all the forms of insanity mentioned above. This condition of a relatively lesser degree of vasomotor disturbance is also of a better prognostic augur than vasomotor unrest in higher degree, and at more excessively abnormal blood pressure levels, if long continued. This statement does not refer to the old chronic cases and to those who are already demented.

In most general terms it can be said that the care which is devoted to the insane in the institutions (hospitals) has the tendency to oppose and to mitigate the vasomotor unrest and to reduce the blood pressure to a level that more approaches the normal blood pressure value. Certain therapeutic measures used in the hospitals are, in this respect, more effective than others.

In a future communication I wish to give account of certain facts observed by me which, in some measure, elucidate this subject.

In this connection I wish to describe a new mode of medicinal action, which first I observed in the year 1909. This new mode of action I have since that time further investigated, in regard to the biochemic reaction and the physiological mechanism, through which it is explained. I have also investigated the technical details related to its mode of employment, and fundamental principles related to its therapeutic use.

The pharmacodynamic action alluded to manifests itself by normalizing the blood pressure. If the blood pressure has been too high, it becomes decreased; if it has been too low, it

becomes increased; and from both the opposite deviations it is reduced to 150 mm. Hg., or nearly this figure; gradually it becomes more and more stable at this level. Thereby vasomotor tranquillity at normal blood pressure level is restored.

It must not be expected that the normalizing of the blood pressure by means of therapy and the restoration of vasomotor tranquillity by medical art shall cure the disease in a given case of insanity. It must be expected that the mental disease, in spite of this proceeding, shall continue to run its course. However, the result of the evolution of the disease, be it restoration to health, or be it development to mental incapacity and dementedness, or to grade of either, is influenced by numerous factors, among those even the vasomotor condition of the case, the kind, the degree and the duration of the vasomotor disturbance.

The mechanism through which the vasomotor condition during the period of evolution of the mental symptoms exercises influence upon the resulting mental condition of the patient later on, when the active symptoms have run their course, is the object of my continued investigation.

REFERENCES.

- ¹ By kind consent of chief physician, Professor B. Gadelius.
- ² By kind consent of chief physician, Dr. E. Göransson, and his successor, Dr. A. Granholm.

Clinical Department.

PULMONARY SYPHILIS: WITH THE REPORT OF A PROBABLE CASE.

BY CADIS PHIPPS, M.D., BOSTON,

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PREVIOUS to 1810, when Bayle's "*Recherche sur la phthisie pulmonaire*" appeared, syphilis of the lungs was practically unrecognized, or, at best, the few attempted descriptions of it were vague and essentially legendary. During the first half of the nineteenth century some attempt was made to describe the condition, but it was not until 1853, when Depaul read his paper on congenital syphilis before the Académie de Paris, that a good anatomical description appeared. Two years later Vidal devoted some space to pulmonary syphilis in his treatise on venereal diseases, and in 1858 appeared Virchow's classic, "*Ueber die Natur der constitutionell sypilitischen Affectionen*." During the later years of the nineteenth century many cases, probable and improbable, of pulmonary syphilis were reported, and we find such men as Hutchinson, Pearson, and Weber devoting much time in the "*Transactions*" of the Patho-

logical Society of London to its discussion; while on this continent appeared reports from Engel and Porter and a host of others. More recently careful work has been done by Councilman, Remsen, Claytor, and others, with several reports during the past year, notably those by Lyon and Wood. Probably the most complete discussion and bibliography was that of Beriel, published in 1907.

The typical lesion of pulmonary syphilis is a fibrous interstitial pneumonia extending along the bronchi and, less often, caseous pneumonia and gummata (the most careful description of the last still being found in Virchow's original article). Different classifications have been made by different observers, but, briefly, it may be said that in the hereditary type we may have either the interstitial or the "white" pneumonia, or, rarely, gummata; while in the acquired form we find, besides the changes in the lymphatics and neighboring tissues, a fibrosis extending in from the hilus, broncho-pneumonia (very rare), gummata, and syphilitic phthisis. It is with this last, syphilitic phthisis, that we have to concern ourselves in the present discussion.

The symptoms of pulmonary syphilis are essentially those of pulmonary tuberculosis, except that they are usually less pronounced (loss of weight, night-sweats, fever, etc., are apt to be less). Also we expect other evidence of syphilis (history, other lesions, and positive Wassermann reactions), together with the absence of tubercle bacilli in the sputum on repeated examination. Of course the two diseases may be present in the same individual; as to their effect upon each other, different views have been expressed, Potain asserting that syphilis paves the way for the invasion by tuberculosis and aggravates a coincident tubercular lesion, while Rindfleisch feels that the two are antagonistic and that syphilis may exert a curative action on tuberculosis (by encapsulation).

As to the incidence of pulmonary syphilis, many conflicting statements have been made. Virchow considers its occurrence as very rare, while Hutchinson states that all the tissues of the body, including the lungs, are open to invasion during the secondary stage of syphilis, and that the lungs may be affected even by tertiary syphilis. As recently as 1912 v. Strümpel dismisses the subject in a few lines, as essentially a medical curiosity, while Dieulafoy devotes a chapter to it in his text-book of medicine. Without taking either extreme view, it may be wise to bear in mind the possibility, even if remote, of pulmonary syphilis, just as we might take into consideration the possibility of a pneumonia being due to the Klebs-Loeffler bacillus, and so amenable to a specific treatment. Because of this possibility and also because of rather striking results, I submit the following case:

E. G. N., male, age 31, white, salesman, single. Seen first on May 25, 1914. Complaint, "lung trouble and paralysis."

Family History. Excellent.

Past History. (Obtained later.) Patient states that he was never sick until the onset of his present illness; he had not been subject to coughing or "catching cold" and had considered his health excellent. He has smoked tobacco in moderation and occasionally drank to excess. He denies having had any venereal disease, although he admits frequent "exposures."

Present Illness. The present illness began six months ago, with mild attacks of dizziness and some abdominal discomfort, both of which, attributed at the time to constipation, increased slowly in severity. Shortly after this he noted difficulty in locomotion, especially in his left leg, and then consulted a doctor, who took some of his blood for examination. He was told that the blood was "positive," and was given potassium iodide, which he took for only a week or two. For the past four months he has had a cough, with a moderate amount of muco-purulent expectoration, occasionally blood-streaked, and progressive loss of strength, so that he has been confined to bed for the last three months. The cough has increased in severity, and for about six weeks he has felt feverish. He has lost about ten pounds in weight. For the past ten days he has been coughing continuously and has been confused mentally and unable to feed himself or move about in bed. He has had occasional night-sweats. He has never coughed up blood in any quantity.

Physical Examination. Patient lying with head and shoulders bolstered up on pillows; considerable dyspnea; noticeable cyanosis; marked prostration. Temperature, 100.8. Both pupils dilated, right larger than left, both react to light. Tongue protruded slightly to left of median line; coated. Neck rigid and somewhat retracted. Cervical glands not palpable. Heart: dullness extends from 9 cm. to the left of the mid-sternal line to 2 cm. to the right; action regular and rapid (104); no thrills; no murmurs heard; pulmonic second sound accentuated. Systolic blood pressure 120 and diastolic 80. No atheroma. Lungs: almost entire left upper lobe gives marked dullness on percussion with increased tactile and auditory fremitus, many fine moist râles and loud bronchial breathing, most marked at apex; a few scattered coarse moist râles in left base behind; right apex shows dullness, slightly increased fremitus, fine moist râles, and broncho-vesicular breathing; slight dullness with decreased fremitus and breath sounds and crepitant râles in right base. Abdomen shows no abnormal dullness or tenderness. Liver and spleen not palpable. Extremities: no edema; slight flaccid paralysis of left arm and leg; Koenig, Babinski, ankle clonus and exaggerated knee reflexes on both sides, but most marked on left. Urine showed the slightest possible trace of albumin, and was typical of a fever (active hyperemia). Sputum not examined at this time.

Although I felt confident that the man had an advanced pulmonary tuberculosis, from which he would undoubtedly die in a few weeks, nevertheless, because of his history of a positive Wassermann reaction and his cerebral symptoms, I prescribed mercury and potassium

iodide, as well as giving directions for forcing nourishment and keeping him out of doors as far as possible (he was able to have his bed moved to a "back piazza").

A few days later his sister (he lived in a neighboring city) telephoned me that the patient "seemed a little better," and this apparent improvement continued so that at the end of a few weeks she told me that he was "gaining rapidly." Two months after my visit he had so far improved as to be up and around his house, taking occasional short walks out of doors. I heard nothing more from him until November 25, 1914, when he wrote that he was in the country having a "good time," and that his only complaint was the partial paralysis of his left arm and leg. He had no cough and apparently little, if any, dyspnea on exertion.

On June 15, 1915, I was again called to see him as he had had a return of his cough and dyspnea and also increasing difficulty in the use of his left arm and leg. He stated that he had neglected to take his medicine for about six months, and had noticed the onset of his present symptoms early in May. Examination of the lungs revealed dullness over right apex, with bronchial breathing and fine moist râles, and moderate dullness over left upper lobe with broncho-vesicular breathing and moist râles. There was moderate paralysis of the left leg, with markedly increased knee kick and ankle clonus, some spasm of the flexor muscles and slight anesthesia.

I advised a return to potassium iodide and mercury, and also tried, with poor success, to make his surroundings more hygienic (he had moved at this time to a very poorly ventilated house and had no means for sleeping out of doors). In spite of adverse conditions, he improved rapidly and called at my office two months later, showing but few signs in his lungs (both apices were dull and the breathing was broncho-vesicular, but no râles were heard), and with perhaps slight improvement in the condition of his leg.

He continued taking his medicine faithfully (he refused to have salvarsan), and occasionally telephoned to me that he felt perfectly well except for "weakness" in his left arm and some difficulty in walking.

He ceased taking his iodide and mercury on November 1, 1916, and on the thirteenth of the month came to my office. Examination of his lungs showed nothing abnormal except very slight dullness over the left apex, with the breath sounds slightly harsher than normal. His left arm showed a slight spastic paralysis with some muscular atrophy, the left knee kick was exaggerated, and the left leg also showed a slight degree of spastic paralysis and muscular atrophy. I referred him to Dr. W. P. Boardman, who examined him and also did a Wassermann reaction which proved negative (due to his long-continued medication?).

Because of the fact that the patient stated

that his sputum had been sent to the Board of Health laboratory "many times" before my first visit and that the reports had all been "negative" and because of the rapidity with which his condition improved under specific treatment, even when his hygienic conditions were very unsatisfactory, Dr. Boardman agreed with me in the diagnosis of a probable pulmonary syphilis.

I wish to acknowledge my indebtedness to Dr. Boardman for his help in preparing this case.

BIBLIOGRAPHY.

- Allbutt's System of Medicine. Vol. v, p. 321.
 Barle: Recherche sur la phthisie pulmonaire. Paris, 1810.
 Bayle: Mémoire sur la phthisie pulmonaire. Paris, 1812.
 Berial: Syphilis des poudrons. Paris, 1907.
 Buchanan, R. J. M.: Liverpool Med.-Chir. Jour. 1907, Vol. xxvii, No. 2, p. 77.
 Claylor, T. W.: Am. Jour. Med. Sci. Vol. ccix, pp. 563-575.
 Councilman, W. T.: Johns Hopkins Med. Bull. 1891, No. 11.
 Coupland, Sidney: Trans. Path. Soc. London, 1876, p. 303.
 Delepine and Siale: Trans. Path. Soc. London, 1891, p. 141.
 Dieulafoy, G.: Text Book of Med. 1912, p. 231.
 Elliott, John: Liverpool Med.-Chir. Jour. 1907, Vol. xxvii, No. 2, p. 89.
 Engel: Phila. Med. Times. October, 1882.
 Fowler and Goodlee: Dis. of the Lungs. 1898, pp. 429-453.
 Goodhart, J. W.: Trans. Path. Soc. London, 1874, p. 25.
 Ibid.: 1877, p. 313, and p. 359.
 Grandhomme: Revue mens. d. mal. de l'enfance. Nov., 1886, p. 485.
 Grenadell, W. S.: Trans. Path. Soc. London, 1876, p. 43.
 Ibid.: 1877, p. 310.
 Habershon, S. H.: Trans. Path. Soc. London, 1894, p. 18.
 Herxheimer: Ergebnisse der Pathologie, 1906, p. 1.
 Porter, Charles: Annalen. 1884, Vol. ix, p. 184.
 Hutchinson, Jonathan: Syphilis, p. 252.
 Hutchinson, Jonathan: Trans. Path. Soc. London, 1877, p. 312.
 Keyes, E. L.: Syphilis. 1908.
 Kokawa: Arch. L. Derm. u. Syph. 1906, Vol. lxxviii, pp. 69 and 319.
 Lyon, J. H.: BOSTON MEDICAL AND SURGICAL JOURNAL. Aug. 31, 1916, p. 286.
 McDougall, J. E. R.: The Biology and Treatment of Ven. Dis. 1906, p. 167.
 McDougall, J. E., and Gullan, A. G.: Liverpool Med.-Chir. Jour. 1907, Vol. xxvii, No. 2, pp. 84 and 86.
 Millan, quoted in Fournier's Traité de la Syph. 1906, Vol. ii, Part 2, p. 710.
 Osler and McCrae: System of Med. Vol. iii, p. 474.
 Pearson, Irvine: Trans. Path. Soc. London, Vol. xxviii, p. 30.
 Perry, E. C.: Trans. Path. Soc. London, 1891, Vol. xlii, p. 63.
 Porter, Bvrbner: Phila. Med. Times. Aug., 1878.
 Potain: Gaz. de méd. et de clin. pratiqué. 1885, p. 15.
 Potain: Gaz. des hôp. 1888, Nos. 137 and 142.
 Pre-Smith, P. H.: Trans. Path. Soc. London, 1877, p. 268.
 Remsen, C. M.: Johns Hopkins Med. Bull. Vol. xiv, 1903, p. 280.
 Rolleston, H. D.: Trans. Path. Soc. London, Vol. xlii, 1891, p. 50.
 Rindfleisch: (Quoted by Buchanan, *q. v.*)
 Strümpell, Adolf: Médecine. 1912, Vol. i, p. 340.
 Vidal, A.: Traité sur Ven. Dis. 1855, p. 452.
 Virchow, von Rud.: Virchow's Archiv. Vol. xv, 1858, p. 217, No. 12.
 Weber, Herman: Trans. Path. Soc. London, 1866, Vol. xvii, p. 152.
 Wood, N. K.: BOSTON MEDICAL AND SURGICAL JOURNAL. Nov. 9, 1916, p. 677.

Reports of Societies.

THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

THE fourth meeting of the Society was held at the Boston City Hospital on April 25, 1916, with the president, Dr. Abner Post, in the chair.

The following cases were presented:

1. TUBERCULIDE(?).

Presented by Dr. W. P. BOARDMAN.

A man, fifty-four years of age, and with no family history of tuberculosis, has been having for twenty years scattered papules, which tend to become pustular and leave behind them deep, though small,

jagged scars. Subjective symptoms have been absent. Some of the scars suggest syphilis, but the long duration of the disease militates against this diagnosis.

2. NAEVUS PIGMENTOSUS.

Presented by DR. T. W. THORNDIKE.

A pigmented mole, interesting on account of its recent active growth. The lesion began two weeks after birth, and was then about half its present size. It increased in size as the body enlarged. About eight months ago it began to take on renewed activity and to spread. The mole, as a whole, is flat, with an occasional rough, warty place, and its color is black. There has never been any hair. The patient thinks that this recent growth began after irritation with glasses.

On account of the woman's age and on account of the possibility of melanotic sarcoma, it seemed wise to try to remove the growing portion of the mole with radium, and the present visibly reddened portion is due to the action of radium (500 milligrams).

3. MULTIPLE FIBROMATA AND HYPERTROPHIC PULMONARY OSTEO-ARTHROPATHY.

Presented by DR. T. W. THORNDIKE.

The patient was exhibited because of his combined dermatological and medical conditions. He was a laborer, born in Ireland fifty-three years ago, and had had a chronic cardiac lesion and suffered a long time with rheumatism. His internal medical picture was one of hypertrophic pulmonary osteoarthropathy, a condition of which there are said to be now over seventy cases recorded in the literature. The enlargement of the hands, fingers, feet and lower forearms were noteworthy, but there was no enlargement of the bones of the skull or face, as in acromegaly. The x-ray showed an ossifying periostitis of the articular structures of the wrist and phalanges.

From the dermatological point of view, the case was one of extraordinary development of fibromata, of which there were hundreds, varying in size from a pea to a baseball. Some lay beneath the skin; others were sessile or pedunculated; all were soft and without subjective symptoms. The process started when the man was about ten years old, and apparently there are no other cases in the family. Mentally the man seemed normal.

4. CHLOASMA AND FIBROMA.

Presented by DR. T. W. THORNDIKE.

The family history was negative. Seventeen months ago the patient gave birth to a baby, and since then has not been well, complaining of severe headaches and dysmenorrhea on slight exertion. There are no signs of tuberculosis. Following this pregnancy, pigmentation developed, and today the chloasma is universal, but more widespread over the back. About three years ago fibromata began to appear, and today are chiefly limited to the trunk.

5. DERMATITIS MEDICAMENTOSA.

Presented by DR. E. L. OLIVER.

A woman, aged thirty-four, had been taking sodium bromide for one week before the present lesions began to appear. At presentation there were on forearms and chest, half a dozen dime to fifty-cent sized, very red, sharply defined, round lesions,

which appeared to be bullae, but when punctured with a pin gave out practically no fluid. In appearance the lesions were fairly typical of bromism or iodism, and were quite painful.

6. TUBERCULOUS CUTIS WITH TUBERCULOUS LYMPHANGITIS (?).

Presented by DR. E. L. OLIVER.

The patient developed tuberculous sinuses in the forearm and maxillary bone in childhood, and a similar sinus in the right groin in 1905. Three years later a swelling appeared in the right lower leg. Since then he has had recurrent erysipelatous attacks, with fever every three to six weeks, their duration being from three to seven days. At present there is a condition of edematous swelling in the right lower leg from toes to knee, and there are tuberculous lesions on the feet and on the outer side and plantar surface of the foot. In addition, one notes papillary and verrucous growths on the first, second, third and fourth toes, and spawn-like papules on the dorsum of the foot, suggesting in appearance lesions of lymphangiomata.

7. ALOPECIA.

Presented by DR. THORNDIKE.

A general alopecia of the scalp, of one month's duration, in a little girl. There is extreme loss of hair, which came on suddenly, with no associated dandruff or seborrheic element.

8. RODENT ULCER.

Presented by DR. T. W. THORNDIKE.

The patient was presented to show the remarkable results obtained from radium and the Coolidge tube. There was deep involvement of the tissue about the eye, but fortunately the sight has been saved.

9. LUPUS ERYTHEMATOSUS.

Presented by DR. BOARDMAN.

Seven years ago the disease began with slight erythema and burning of the face. The interest in the case lay in the eruption of the disease in the mouth and on the left elbow. Great improvement had followed the application of ten grains of salicylic acid in one ounce of collodion.

10. ALOPECIA AREATA.

Presented by DR. T. W. THORNDIKE.

The hair had been falling for twelve months, until total alopecia of the head and body was present. The patient tired easily, and had been working hard mentally.

11. SYPHILIS.

Presented by DR. BOARDMAN.

The first child was still-born at eight months, the second was still living, and the third child lived about an hour. There was an ulcer on the knee six years ago, which left a typical luetic scar. The present lesion began as a papule on the left side of the nose several months previously, and had developed with great rapidity.

12. CARCINOMA.

Presented by DR. T. W. THORNDIKE.

There was no history of carcinoma in the patient's family. The present condition began four years ago as a papule on the lip. There has never

been any tendency to heal. Pain has been absent. When first seen, radical removal was advised but refused. The ulceration has greatly increased and destroyed all tissues, causing the teeth to fall out, and producing great inconvenience from the constant dribbling of saliva. CO₂ snow and radium have been used, but the greatest improvement has followed the use of the Coolidge tube.

13. CASE FOR DIAGNOSIS.

Presented by DR. E. L. OLIVER.

One year ago the patient first noticed small red spots on either side of the nose under the bridge of the glasses. Six weeks ago erythematous areas began to appear over the nose and cheeks. Four weeks ago the fingers and palms became swollen with dull red macules and papules, and accompanied by slight general adenopathy.

Present distribution of lesions: both ears, nose, cheeks, hands, and elbows. The extremities are cold and slightly cyanotic. There are in addition a few areas of alopecia. The Wasserman reaction ten days previously was moderately positive, but when repeated one week later, proved negative without any intervening treatment. Four injections of Koch's old tuberculin intradermally produced marked febrile reaction.

14. ICHTHYOSIS.

Presented by DR. L. J. CUMMINS.

The patient was a girl thirteen years of age. After one week's treatment the mother noticed that the child's skin was not as dry as it was, in fact it was becoming slightly oily, that the dandruff had lessened in amount, and that the hair was getting thicker and quite oily. The treatment used was not considered the cause of the sudden amelioration of symptoms.

15. XANTHOMA TUBEROSUM MULTIPLEX.

Presented by DR. T. W. THORNDIKE.

The patient was thirty-four years of age, born in the United States, married, and had never been pregnant. Four years ago the uterus was removed because of a benign growth. Indigestion and constipation had existed for years, but there was no history of liver or pancreatic disturbance. The dermatosis began about four months previously in the form of slightly elevated, hard, yellow papules. As they developed they increased in size to large papules or nodules, or became flat areas, sharply defined and without subjective symptoms, except those on the fingers, where there was some parasthesia on pressure. The eruption started in the interdigital spaces and then appeared in the furrows of the plantar or palmar surfaces, over the buttocks, scapulae and elbows, and just visibly below the eyes. Singularly the palpebral region was spared. The urine was negative, there being present neither sugar nor bile. The patient was placed under radium treatment, and the lesions responded rapidly to the rays. The reaction following a ten-minute exposure to fifty milligrams of radium bromide with 1/10 inch aluminum filtration was surprising in its severity.

16. NAEVUS VASCULARIS.

Presented by DR. E. L. OLIVER.

The patient had been exhibited at previous meetings of the Society, but was brought forward again to emphasize in these "port wine" marks the advan-

tage of the Kromayer lamp over radium, which left permanent changes in the skin.

17. LUPUS ERYTHEMATOSUS.

Presented by DR. W. P. BOARDMAN.

The case was interesting because of the youth of the patient, and because his brother was being treated for a similar eruption.

18. EPITHELIOMA.

Presented by DR. T. W. THORNDIKE.

The disease began eight years ago as an excoriation, and at presentation showed deep ulceration painful to the touch. The surrounding erythema was due to erysipelas, which was subsiding. The ulcer was being held in check by x-rays.

19. TUBERCULOUS ULCER.

Presented by DR. T. W. THORNDIKE.

The patient stated that the lesion originated in the bite of a mosquito five weeks previously. On examination one noted a punched-out, moderately deep ulcer, with more or less discharge. No varicose veins were visible, and there were no lesions elsewhere on the body. The Wassermann test was negative, although the ulcer presented the classical appearance of a luetic ulcer. The biopsy revealed tuberculosis.

20. MYCOSIS FUNGOIDES.

Presented by DR. F. S. BURNS.

The disease began in the summer of 1912, and for six months was limited to the collar line, the face and the scalp. During the succeeding six months isolated lesions appeared on the legs. The process was erythematous, mildly exudative and crusting, all areas possessing fairly well demarcated outlines varying from two cm. to eight cm. in diameter.

The disease, since its onset, had been slowly progressive, and practically intractable to all treatment except x-ray applications, which entirely healed some areas and caused the ameliorations of others. Its original characteristics, those of seborrhoeic dermatitis with well-defined outlines, had been more or less well preserved. In September 1915, many of the areas, particularly those on the thighs and legs, began to show decided increase in infiltration and assumed the appearance of tumefactions, sometimes occupying entire portions of the small lesions; but in the larger plaques infiltration usually consisted of several such tumors distributed over its surface.

The disease was particularly interesting because in the earlier manifestations of the eruption the disease was thought to be a perfect replica of Brocq's "Eczema psoriasiforme with elephantiasis thickening of the ears." The question therefore presented itself as to whether Brocq had been able to follow his earlier cases to their conclusions.

CHARLES J. WHITE, *Secretary.*

THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

THE fifth meeting of the Society was held at the Massachusetts General Hospital on Wednesday, October 18th, 1916, with the President, Dr. Abner Post, in the chair. The following cases were presented and discussed:

1. PSORIASIS.

Presented by DR. L. J. CUMMINS.

Eight years previously the patient had a general outbreak of psoriasis which lasted six months, but has been entirely free from lesions up to four months ago. At her first visit the patient presented on her buttocks, thighs and extensor surfaces of the legs, small and large, dull-red scaling areas and considerable scaling in the scalp, especially along the line of the hair. The skin at the sides of the nose and on the chin was red, scaling and very seborrheic in type. All nails of fingers and toes were affected, and there was marked inflammation around the nails, with thickening and scaling underneath, which caused elevation of the nails. At the sides and on the palmar surface of the fingers, and also on the palms, there were numerous, small and large, scaling lesions. The condition of the toes was similar to that of the finger-nails, but was less inflammatory.

2. NAEVI S VASCULARIS.

Presented by DR. E. L. OLIVER.

Duration, since birth. The lesion has been treated about twelve times with the Kromayer lamp and twenty times with radium.

The Kromayer lamp was applied (with pressure) for about half an hour, using 2-4 mm. blue quartz glass filter. The radium ($\frac{1}{2}$ strength varnish applicator) was applied for half an hour to forty minutes at a time. No screen except paper was used. There has been marked improvement.

3. DERMATITIS EXFOLIATIVA.

Presented by DR. L. J. CUMMINS.

The disease started one year ago. The lesions first appeared as red macules distributed on the outer aspects of the lower legs, and the ensuing scales when picked off left soft, red, moist bases. Seven months later, with the onset of warm weather, the lesions increased in number and in severity, and the general condition became worse. Two months ago chills set in, not coming at any special time, but appearing more frequently in the morning.

On admission, two months ago, the general condition was very poor—excessive scaling over all the body, including the palms, soles, feet and scalp. When the scales are removed, the skin underneath is bright red, moist and very tender. Physical examination was otherwise negative. The powder treatment has been kept up continuously without change, and the patient is steadily improving.

4. LUPUS ERYTHEMATOSUS.

Presented by DR. BOARDMAN.

Lupus erythematosus, of ten years' duration. When first seen the disease involved most of the face and the mastoid region. Treatment consisted of salves and pastes. A year ago treatment with CO₂ snow was instituted, and practically the whole area was frozen. After waiting a couple of months, the Kromayer lamp (ultra-violet rays) was used, and nearly the whole area was treated again. Very severe reaction resulted from both forms of treatment. There is now considerable scarring, but there seems to be quite a little improvement, and the patient is encouraged to continue the treatment.

5. CASE FOR DIAGNOSIS.

Presented by DR. J. H. BLAISDELL.

An interesting condition of three months' duration. The eruption was limited to the lower lids of

both eyes, and consisted of a raised, very red band, one-half inch by one quarter, studded with subcutaneous, yellow, millet-seed-sized lesions. Beneath the lesion on the right lid are several discrete, similar sized, yellowish lesions with surrounding redness. The lesions have never ulcerated. The patient has applied nothing but a salve. On picking the lesions up between the fingers, the yellow pouches can be felt as hard little kernels beneath the skin. Provisional diagnoses of acnitis, xanthoma and colloid milia have been made.

DISCUSSION.

DR. OLIVER asked for a general expression of opinion about the eyelids.

DR. SMITH said there were certain features about them that suggested lupus erythematosus, although he did not believe that lupus erythematosus was the disease present.

DR. HARDING stated that the lids resembled a tubercule more than anything else, and that the color was not that of xanthoma.

6. LYMPHANGIOMA CIRCUMSCRIPTUM.

Presented by DR. BLAISDELL.

Two to three years' duration. Today there is on the roof of the mouth an elongated group of silvery gray vesicles, each one with an apparently broken center, the whole suggesting strongly frog-spawn.

DR. SMITH stated that he was perfectly convinced that the etiological factor was an excessively short-stemmed pipe. He had seen a case where it seemed as though the process was going on to epithelial degeneration.

DR. OLIVER disagreed entirely with this position, and regarded the disease as lymphangioma.

7. MYCOSIS FUNGOIDES.

Presented by DR. OLIVER.

Four years ago the man noticed little watery vesicles on the abdomen. These spread to the arms, body, and finally to the legs. A year and a half ago the skin of the arms, trunk and legs showed many areas, macular and maculo-papular, distinctly light red in color, with definite edges, infiltrated and scaling. The buccal mucous membrane presented many pinhead-sized, circular, discrete and confluent, yellowish rings, slightly raised. From the original outbreak until two months ago the patient's condition has been intermittently retrogressive.

The eruption is now present over the face, scalp, trunk, arms, legs and back. There is marked elephantiasis of the right leg, scrotum and penis. The patient has received x-ray exposures and neosalvarsan five times. This man subsequently died of pneumonia, but before his death great lymph stasis of the genitals and lower extremities occurred, and a large mass nearly filled the left abdomen. At autopsy a huge lymphoma was found in the abdomen and all lymph glands were discovered to share in the lymphomatous process.

8. EPIDERMOLYSIS BULLOSA.

Presented by DR. L. J. CUMMINS.

At the age of one month the child was admitted to a hospital with a history of bullous lesions at birth, and a diagnosis of syphilis was made. The child has never been free of lesions, is now nine years old, and has been treated, since early summer, at the New England Hospital, where she was admitted

to the ward with a diagnosis of epidermolysis bullosa. Under boric acid ointment and rest in bed the bullous lesions have entirely cleared up, but as soon as the child is up and around the ward new bullae develop. The patient has difficulty in eating hard food, and the voice has been affected at times

9. LUPUS ERYTHEMATOSUS.

Presented by DR. BLAISDELL.

The boy presented a very diffuse eruption of lupus erythematosus, involving the hands, forearms, and the mucous membrane of the mouth. The trouble began shortly after an extreme exposure to sunlight four years ago, and has been intermittently present ever since, appearing in the spring and early summer. The patient was again exposed this year to sunlight, and the outbreak followed shortly. He has received mild, soothing treatment, so that the erythema of the hands has subsided somewhat, but the lips and mucous membrane still show active lesions.

10. DERMATITIS HERPETIFORMIS.

Presented by DR. OLIVER.

Three months ago the patient was summoned to a fire in a freight car, containing beer packed with straw in barrels. He found this a more smoky fire than he had ever encountered, owing to the confined space. The following morning he broke out all over his body with grouped vesicles, and his wife, an intelligent woman, attributes the disease to this fire. The disease has persisted ever since, characterized by the periodic outcropping of grouped vesicles.

Today on the right ankle is a large group of large vesicles closely clustered and surrounded by erythema. A number of the vesicles are elongated; none of them are large enough to call bullae. The right forearm, from wrist to elbow, shows scattered, absolutely indefinite excoriations, but the disease, as a whole, has cleared up except in the positions noted above.

The man describes himself as a person who must do what he is going to do immediately or something will break—in other words, a man living at high tension.

CASES OF SYPHILIS.

Presented by DR. C. MORTON SMITH.

11. A patient with a primary lesion on the lower lip undergoing resolution, and a roseola on the trunk, but without the palpable characteristic glands under the angle of the jaw that one would expect.

12. A young girl exhibiting the scars of congenital syphilis. The radiographs showed the absorption of bone about the elbow joint. The lesions on the hand, the destruction of bone, the character of the eruption on the dorsal surface of the right hand were strongly suggestive of tubercular trouble. Some of the physicians who saw her at the time of admission to the ward were inclined to favor the diagnosis of phlyctenular process in the cornea. Her Wassermann, however, was strongly positive; and the lesions, which might possibly have been of tubercular origin, improved rapidly under iodide of potash and the external use of ung. hydrargyri, together with the intravenous administration of diarsenol. Another x-ray plate revealed the bony involvement under the scars on the legs and forearms. There was almost total obliteration of the medullary canal. A third plate of the bones of the

forearm and finger disclosed destruction of the first phalanx of the middle finger.

As to treatment Dr. Smith stated that he was administering about one and a half decigrams of diarsenol at weekly intervals, because he believed that one accomplished much more by small repeated injections than by giving one or more massive doses.

13. A man who showed well the characteristics of an early secondary involvement of the palms, where there is a pretty extensive eruption, usually symmetrical, as a part of a general secondary eruption, where one notes just a superficial epithelial process, rather than the deeper local fissures of the palm, that may involve one palm alone, when the lesion occurs late in the course of the disease. An eruption of this sort allows a comparatively easy differential diagnosis. When the lesions that occur are less extensive and of a more decidedly papular character, with the deeper involvement and the punched-out appearance, they resemble psoriasis very closely. One of the chief distinctive features is localization in the palms; whereas in psoriasis there are very apt to be lesions on other parts of the body, on the back of the hands, for instance, with involvement of the nails or what not.

14. A man who had his primary lesion eight months previously, with sore and bubo, and, a month and a half later, a skin rash and sore throat, which have persisted up to the present time. He showed fissure of the tongue, ulcerations in the mouth, and, on the skin, a precocious type of secondary eruption. A destructive genital lesion was also present.

15. A man whose primary sore dated back about five months ago, followed in due course by a general roseola and a sore mouth and throat. The principal lesion at presentation was a very interesting and characteristic ulceration affecting both curves of the soft palate. On his body there was a fading roseola, most marked on the back. There has been practically no treatment.

Dr. Post said that the cases shown by Dr. Smith were most interesting in their close resemblance to tuberculosis. He asked Dr. Smith why he used diarsenol instead of the original salvarsan. Dr. Smith replied that at the present moment there was a difference in price. As far as the appearance and the preparation were concerned, there were no apparent differences between the two drugs. As far as clinical use was concerned, it seemed that diarsenol was subject to the same dangers and disadvantages that belonged to the old salvarsan. While some unpleasant experiences (nothing serious) had been observed, they were identical with those following old salvarsan, and the good effects gave the impression that the two drugs were identical.

CHARLES J. WHITE, *Secretary.*

HOSPITAL BEQUESTS.—The will of the late Susan C. Dexter of Beverly, Mass., which was recently filed at Salem, Mass., for probate, contains a bequest of \$2000 to the Vincent Memorial Hospital of Boston.

The will of the late Katherine A. Sullivan of Roxbury, Mass., recently filed in the Suffolk Probate Court, contains bequests of \$4000 to the Carney Hospital, \$3000 to the Holy Ghost Hospital, Cambridge, \$2000 to the Free Home for Consumptives, Dorchester, and \$1000 to St. Elizabeth's Hospital, Boston.

Workingmen's Compensation.

ARGUMENT IN FAVOR OF SENATE BILL No. 135, BEFORE THE JOINT COMMITTEE ON THE JUDICIARY.

BY THE COMMITTEE ON WORKMEN'S COMPENSATION
OF THE MASSACHUSETTS MEDICAL SOCIETY.

Mr. Chairman and Gentlemen:

AFTER four years of trial of the Compensation Act we believe it has been proven that there have been many glaring defects in the administration of the act. Our amendment, we believe, offers a practical correction of one of the greatest of these.

We are not entirely unselfish in our appearance in advocacy of this measure. The amendment will be of benefit to the profession generally, without doubt, but it is not the benefit of the few dollars and cents which might come in a given case to an individual doctor, but it is a benefit of broader significance. It will restore the situation under which the practice of medicine formerly obtained, where for the conscientious man a fair field was given (and we seek the advantage of none other), in which professional merit brought its proper results. Under present conditions per contra, we are forbidden to treat the man at whose birth we may have officiated, or have guided him successfully through the various childhood stages of measles, croup, etc.,—even to assisting at the birth of his own children. But when he applies to us for treatment for his injury, even if for no other reason than a natural and reasonable preference, we must say to him—"no, you must go elsewhere, unless you are willing to forfeit some of the benefits of the Workingmen's Compensation Act." Is it any wonder that under such conditions one of two things happens every day in the experience of many physicians,—either the injured employee gives up his benefits under the act rather than leave his own doctor, or the doctor is compelled to pocket his financial loss rather than turn his patient away to the tender mercies of another. In this connection it should be borne in mind that the company doctor is not doing insurance work alone in most instances; he is also a practitioner, and in the field of competition, just as all doctors are.

Now, gentlemen, you must not lose sight of the fact that, while the employee is the man for whose benefit the act is administered, and the rights of the employer and the insurance company are also involved and protected, the doctor is a mighty essential part of its successful administration. You can't run the act without him, in the very nature of things. If you could, as a profession we shouldn't complain of a complete elimination. But if you can't, we object to an exploitation which uses us, and yet denies us ordinary justice. We think it fair to say that we should have as much protection as a profession, under the terms of the act, as any other class necessary to its administration; and we are selfish enough to suggest that, next to the employee, consideration should be given to the interests of the doctors, upon whose conscientious devotion to professional duty, upon whose care and skill, in the last analysis, rests the successful repairing of the human machine, broken in the course of its daily toil to the extent of upwards of 1000 per day.

We, therefore, think that we are sufficiently concerned in the Compensation Act to be allowed to express our opinions and present our grievances. Aside from all this, with no selfish considerations, we think that the interests of the doctor, the insurance company, and the employer should be submerged in the consideration of the welfare of the employee. We do say emphatically, however, that in the absence of a positive disadvantage to the laborer, considerations of justice to the doctor should weigh wholly against either of the two other factors, the insurance company or the employer.

We think the service rendered by the insurance companies is not as wholly adequate as it ought to be. If you expect this to be proved by statistics, facts or figures, we must say at the outset that the presentation of such is impossible because they are not available. We do know, however, from our own observation and from the number of men coming to us after being treated by insurance companies, that there is something wrong, and we say that it is inevitable that it should be wrong, when payment of dividends regulates the amount to be expended for medical attention, and a condition of monopoly maintained by the compulsory calling in of company doctors only, negatives all the benefits inevitably resultant from competition on the basis of medical ability, rather than dollars and cents. We have tabulated a few of the cases called to our attention, which show lack of proper medical service, and shall be glad to furnish them to the committee. We may add that, while it is sometimes true that the doctor, who is not an insurance man, does not find the correct solution of his professional problems, which often happens in the solution of questions of law, or indeed of any other business or profession, it should be kept in mind that we are urging an objection to a system and not to individuals.

As was said by the Medical Adviser of the Industrial Accident Board:

"It has been, and is, to the credit of the medical profession that they are loath to discuss in terms of dollars and cents their service to the individual or to the community, but the changing position of the medical profession, brought about by the increase and concentration of population, by the ever-widening influence of state medicine, the loosening of the ties between the physician and the patient, the gradual submergence of the family physician,—all bring us face to face with need of change, and readjustment to meet modern conditions. A well-paid medical service will produce best results."

And again:

"If we consider the law of 1912 from the doctors' standpoint, the small consideration accorded to the medical profession is extremely striking."

We assume that the first question in the minds of your committee will be: Is the work done under the act adequate, or not? We should like to ask the committee to request from the Industrial Accident Board a statement as to their knowledge on this point. They have been administering the act ever since it started, and, fortunately, much of their work is a matter of public record. Requests for statistics might also be made of the board as to the methods of obtaining medical service by insurance companies, i.e. whether by contracts with doctors, and how many send their injured men to the out-patient departments of hospitals, where services of doctors are given free. What are the number of employees a given doctor under contract may have

in a textile mill, for instance, and how many of such doctors have their own practice in addition. Also, in how many cases has the injured employee been seen only by a nurse, or had his injuries dressed only by a fellow employee. Statistics of this kind are not available to us, but we suspect that an earnest inquiry by this committee for facts and figures along these lines will show startling results. We can only say to you that such conditions exist, as we know from our own observations. To what extent it exists, the records of the Industrial Accident Board must show, unless, perhaps, by reason of the fact that the board has no supervision over the medical services furnished by the insurance companies except upon a doctor's disputed bill, it does not appear on their records, and can be determined only by a perusal of the records of the different insurance companies doing this business. We suggest also as pertinent the inquiry as to the average amount paid by the insurance companies to their doctors where contracts are made to take care of accident cases, and the consideration by the company as to how much of his time such a contract doctor can, in all fairness, be expected to give in return for the remuneration received under his contract. We should be glad to have this committee request from the Industrial Accident Board a statement of how many cases they have on record which had been declared cured and ready to return to work by the company doctors, which, upon impartial investigation, were declared not cured and unable to return to work, by the Industrial Accident Board.

We should like to have this committee ask for an opinion from the Industrial Accident Board as to the reason for the large increase in the number of hearings and conferences before the board. It is fair to assume that the Industrial Board has had a wider experience with the administration of the act than any of the other parties concerned. I, in common with others, have heard at least two members of the present Industrial Board state in public that specific injuries have been largely overlooked, and to a markedly large degree, by the companies' doctors.

I wish to call attention to the system which obtains in many factories, of having injuries treated by fellow-workmen without any medical training whatever. We have numerous instances to offer where, in relatively large factories or other places of employment, laymen administer first aid, and frequently decide as to the necessity of the patient's consulting the doctor offered by the insurance company. This decision often concerns amputation of fingers, fractures, the dressing of cuts (which frequently become infected through lack of proper care), and many other surgical procedures. This is a very dangerous and unwarranted expedient to keep down expense and save the time of the company doctor, and results many times, as the facts show, seriously to the disadvantage of the workman, for whose benefit this Compensation Act was passed.

Is this the kind of medical attention which you, Mr. Chairman, would require? The workman has as much right as you to good medical care, and this does not constitute it. Public opinion and the laws of the different states have long ago repudiated as unfair, unsound, and un-American, the old practice of the "company stores," where the employee was forced to trade, and that system has gone the

way of other worn-out and oppressive systems; and yet here in Massachusetts, in the working out of an act supposedly beneficial to the workman, a condition is allowed to exist which, in effect, is the same as the "company stores" referred to; but, instead of dealing in commodities, it compels the submission of life itself.

It will be contended that under our amendment the expense will be markedly increased. This cannot be successfully demonstrated; but if it could be, shall it be said that the lives and crippling of our workmen shall be measured by dollars and cents? If it costs more to give the employee the same measure of medical attention that each man would have for himself, we ought not to let the matter of expense weigh against the protection of our workmen from disabling and crippling industrial accidents, or even death. If we cannot do this, let us go out of workmen's compensation business. But under the guise of giving the workman something which is a great advance economically and socially, let us not deceive ourselves or the workman into thinking that the service which has been largely offered by some insurance companies is carrying out the spirit or purpose of these advantages.

It will be said that the employee will not exercise a wise choice, and that ignorant foreign help will select medical attendance where it can be had most cheaply, and not always of the best. That this is not correct is well known by those who have had experience in our hospitals. Preferences as to physicians in attendance is constantly exercised by just that class of help. They make up very largely the patients who go to the best hospitals for treatment. The argument loses sight, too, of the fact that the benefits of the act extend also to the high-grade, skilled, intelligent, and well-paid men and women who through our industries, who constantly prefer to employ the services of a physician of their own selection, at their own expense, rather than go to the strangers or the inefficient medical service furnished by the companies.

And right here we do not wish to criticize, though it is possible, any individual attention from a professional standpoint. Opinions in a given case may differ. We merely wish to say that it is physically impossible for a doctor, busy with his own patients, to care properly for the immense number of calls on his time, at a much less compensation than he receives from his private rights. Upwards of 1000 accidents occur in a single day and they may tomorrow be tremendously increased in number, and many more than the average occur in a single community. It may be said that under such circumstances an emergency would exist and that the law would take care of it, but, Mr. Chairman, the workman does not determine the existence of an emergency, and I do not believe that there is a single reputable doctor (and, despite insinuations, they are not all being tried for malpractice) who would not jump in with his coat off and sleeves rolled up, ready on the instant to relieve pain and suffering, regardless of questions of emergency, rather than see the injured suffer while waiting the attention of a belated or privately engrossed company doctor. Supposing that the long-suffering doctor relies upon his strict legal rights, instead of regarding the call of humanity as an order to be obeyed on the instant? Shall he be eternally required by the act to ask first the question—who's

to pay? My faith in the unselfish adherence to trust of the members of my profession leads me to the assertion that, regardless of the outcome, the question will still remain unasked until after aid has been rendered to the fullest extent duty demands.

An interesting inquiry might be made, were the figures available of just how many cases, properly subjects of compensation, are never paid for by the insurance companies because the injured workman prefers his own physician and himself bears the expense for such services, thus making, if widely done, a considerable saving to the insurance companies—depriving voluntarily, if you please, the injured workman of the benefits of the act.

Mr. Chairman, an objection to our amendment will be made, and facts adduced showing overcharges and improper service on the part of the medical profession. We are under no illusions, and we remind your committee that this is already provided for under our amendment, and a check placed upon it by referring all such cases to the Industrial Accident Board. Our amendment contemplates in the same way the adequacy of the treatment offered. The employee has a perfect right to select his own lawyer, even when the insurance company is obliged to pay for his services, as shown by Sect. 13, Part II, of the act, when administration is necessary. Why should he not also select his doctor? Suppose there is a dispute as to the right of compensation: if the injured employee conforms to the law, he must go to the company doctor,—an employee and prejudiced in favor of the insurance company. He must call upon him as a witness to substantiate his case, and must rest his case upon the testimony of one whose business it is to save money for the insurance company employing him. You lawyers will recognize at once that what you would not tolerate for a moment in your practice ought not to be tolerated under the act. The impartial physician provided for under the act hardly helps, since he does not see the case at its inception, and often not until the case is nearly well.

We have collected throughout the State a large number of cases in which the law is believed not to have been effectively administered. We will not present these in detail unless the committee wishes, although we have them tabulated and coordinated to present if desired. Samples are as follows:

CASE H. L. Employee fell from staging onto concrete floor, alighting on left heel. He had no treatment except massage. Compensation stopped and man examined by medical adviser of Industrial Accident Board with x-ray. Found to have a fracture, which later required operation at hospital.

CASE F. F. Fracture of both bones of right forearm. Treated by insurance company doctor without x-ray. Compensation stopped and case referred to Industrial Accident Board medical adviser for x-ray. Serious condition of compound fractures discovered, which required operation.

CASE B. M. Man, 56 years old, thrown to ground from wagon, and landed in doubled up position. Suffered pain, and unable to turn over for two weeks. Insurance company doctor reported him fit

for work after treatment. Examined by board's medical adviser and x-ray taken and serious condition found.

The cases might be multiplied indefinitely. That such a situation might also occur where a man selected his own doctor may be true in some individual cases, but that does not alter the point we are trying to make,—that the injured man is not now getting the results he is entitled to. And if he can get them better by choosing the doctor he desires to have treat him, as he at least thinks he can, as shown by the large number of bills filed looking to this object, by the action of the American Federation of Labor endorsing the proposition and by the appearance at this hearing of the large number of men representing labor,—the man vitally interested,—he is entitled to the chance. Certainly he could be in no worse position than he is now if the amendment were adopted, and he would have recovered at least his self-respect, instead of being characterized as too ignorant, too uncivilized, to determine himself what is best for him.

What he wants and what he ought to have is well said by the medical adviser of the board in a published article: "One part which stands out forcibly as a result of experience in making examinations is the fact that oftentimes a long period of disability may be prevented if a little direct personal interest is taken in the cases of incapacitated employees by employers or surgeons." And this, we contend, he can't get and does not get in the machine-like, keep-down-expense method of medical attention he must submit to today, in most cases. We submit to the consideration of any fair-minded man, whether he is not more likely to receive just that personal attention which the medical adviser suggests as necessary, if he is allowed to select his own doctor to treat his injury, as he does in case of the illness of his child or the confinement of his wife.

The medical adviser also said in speaking of important factors in the successful treatment of accident cases:

"When there are pre-existing conditions of infirmity, the real effect of the injury may be given too great or too little weight."

If it is given too great weight, the workman, at least, cannot suffer, but he can suffer and suffer materially, and perhaps permanently, if it is given too little weight. Who can weigh that factor better (and it is a tremendous factor in diagnosis and treatment), the doctor who may know the workman's medical history even from birth, or the man employed by the company, who sees the injured man once, perhaps twice, directs the treatment, many times carried out by one not a doctor, and hurries on to the next case, in his anxiety to get to his own private patients.

I submit that if this law is right and just, if the costs of operation to secure efficient treatment are too great to be borne, the law ought to be given up, and not compromised by the exploitation of its intended beneficiaries by corporations interested primarily in the investment possibilities. These insurance companies, though run by men, are corporations, and the men hold their jobs only so long as the corporation can pay dividends to their stockholders, who in many instances have no knowledge or care as to the management so long as the divi-

dends are paid. Often the stockholders live remote from the company, even in foreign lands. It is impossible for such a corporation to have anything other than a machine-like supervision over the medical end, which is a local problem, and in many instances far removed from the active management of the corporation. It is natural that, in the effort to economize, the company should seek the cheapest medical service it can get consistent with its idea of adequate treatment, and the doubt is resolved in favor of the company instead of the employee.

In serious cases the psychological effect of having a strange doctor or one's own personal friend is often enormous. Every man upon your committee would go to the physician to whom he wished to go, rather than to one to whom he was compelled to go by another's orders. In what respect is the workman different? Yet that is exactly what happens every day throughout the State: the workman is compelled daily to do what no member of this committee would submit to.

It is just practical common sense that the carriers will attempt to economize at every point; and we submit that this attempt to economize and cut corners is one of the greatest causes for the present dissatisfaction with the working of the act.

We wish to call attention to the large use of charitable funds by the companies through the method of referring the employees to charitable clinics and hospitals throughout the State, thus saving the expense of medical service,—not for the workman, and not for the employer, who pays just as heavy a premium as though the medical service were paid for,—but a saving for the insurance company. In many instances the employer is thus doubly taxed, in contributing largely by taxation, and otherwise, to the support of hospitals, and paying at the same time, a large premium on the basis of costs of medical service.

Members of the Massachusetts Medical Society raised the point and received the following ruling, January 2, 1917, from the Industrial Accident Board, as to the adequacy of treatment thus offered, particularly since the Pecott decision:

"To all Insurers:

"The following is a copy of a ruling issued by the board as the result of a conference upon the petition of certain members of the medical profession in regard to the matter of furnishing hospital treatment to injured employees under the Workingmen's Compensation Act.

"The Industrial Accident Board is in receipt of the following 'protest' from various members of the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, to the number of several hundred:

"The undersigned medical men wish to protest against the practice of a certain few insurance companies of referring their cases to open hospitals and clinics. If the patients go there themselves, well and good, but to 'furnish' medical care by referring the patient to a charity is virtually telling him to take care of himself; it gives him no care or privilege whatsoever, which is not the intent of the act, as we understand it.

"We refer this question to your honorable body with the request for a ruling as to whether

such reference can be considered adequate care within the meaning of the act."

"After hearing representatives of the physicians and the insurers, the Industrial Accident Board states its position on the matter to be as follows:

"The board does not approve of the practice, if it exists, of insurance companies in referring cases to open hospitals and clinics, unless insurers have previously made arrangements with such hospitals and clinics for the furnishing of treatment to injured employees.

"To 'furnish' treatment within the meaning of the act imports, in the opinion of the board, something more than a mere direction to an employee to go to an open hospital or clinic. It requires that the insurer shall make adequate arrangements for the care of those to whom the duty is owed in the event of injury. Such an arrangement between the insurer and the hospital would imply that the hospital is prepared to give the injured employee reasonable services; and in any case where the adequacy of such service, arranged for between insurer and the hospital, is questioned, it will be considered by the board on its merits.

FRANK J. DONAHUE, *Chairman.*"

This ruling will do something to correct the abuses which have arisen since the Pecott decision (correct in law as the decision itself may be). But the society will go further, and be glad to have this ruling enacted into law, defining in advance what "adequate" treatment is in this respect.

The doctors would be glad to have the situation which existed before the Pecott decision, enacted into law; which was—that while as now the companies were to furnish medical services, yet by common consent the employee was allowed to choose his own doctor, and the legal rights, as ultimately determined by the Pecott case, were not insisted upon. The services rendered then were scrutinized by the Industrial Board as to adequacy and reasonableness, and in effect, a freedom of choice was given to the workman in the selection of his own doctor, as is now done by some of those companies doing this work.

This leads to the second principle embodied in our bill: the freedom of choice as to physicians, on the part of the workman, limited by the requirement that adequate service be given. One of the basic arguments in favor of a freedom of choice on the part of workmen is that of right. No member of your committee would go to a doctor provided by any one else unless in the exercise of his choice, based on confidence. If your child were injured, you would select the man best qualified in the exercise of your own judgment. It is no different for the workman; he has the same fundamental right, and should have the opportunity of exercising it. We do not desire to criticize any individual doctor, but the facts are:—that adequate and proper treatment is not and cannot be universally furnished. An injured workman treated by a company doctor, who has a dispute in relation to his injuries, is obliged to rely on the testimony of a prejudiced doctor to present his case. How long in law would the lawyers stand for having the only legal defense available to a litigant made by an attorney who was hired by the corporation against which suit was being brought? That is exactly what occurs in the case of injured workmen in disputes as to fact, over the medical features. This is

wrong in principle, and it ought not to be tolerated any longer in this connection than it would be in a legal situation.

As a corollary to this statement, where does the workman's family stand when the case rests on an autopsy made by the company doctor, without the compelling right on the part of the Industrial Board to make an impartial autopsy? A case on record with the Industrial Board illustrates my meaning:

A workman died and was alleged to have lead poisoning. The company's doctor made an autopsy and reported "cerebellar tumor" (which is a tumor on the brain). In this instance, the Industrial Board had a further examination made, which showed the indisputable existence in the brain of chronic lead poisoning and no tumor. Had this impartial examination not been forced, the workman's family would have been unable to have recovered a cent from the insurance companies.

As bearing on the freedom of choice, take the following instance, showing the illegal results under the present system:

A man with a broken wrist, as an emergency goes to his own physician, no company doctor being available at the moment, and the wrist is set. He is then turned over to the insurance company's doctor, who must manipulate the fracture and assure himself it is right and set it over again. The workman gets a bad result, and is left with a permanent disability, for which he can get no redress, as the responsibility is divided. The law compelled him to go to the company doctor for further treatment, and thus there can be no responsibility. The workman has no redress after the compensation has finished, but to continue with his permanent disability.

Take the following case, in which a man received an injury to his knee.

He received treatment at a hospital with which an insurance company had made arrangements. The doctors said the knee must be operated upon or they would stop compensation, implying that the patient was malingering. The man appealed to the board, who had an impartial examination made, and received a report that an appliance would steady the knee and bring about a functional cure, without danger, and give what the workman particularly wanted—a useful knee.

After the hearing, the hospital sent a social worker, who told the patient that if he did not come back and have the knee operated at the hospital, he could not come back for treatment of any sort or under any conditions.

This happened in Fall River, and the name of the hospital is at the disposal of the committee, and the authority for my statement is the Industrial Accident Board.

The fear is expressed that if this amendment becomes law it will operate to interfere with those plants and companies which already have a most admirable system for accident work, such as the Norton Grinding Company of Worcester, and others of its type throughout the State. That fear is groundless in the opinion of the medical profession. This act applies to all workmen indus-

trially employed. In our discussions we are apt to think of the one paid the minimum wage, rather than the highly trained, mentally alert, skilled workman. But the latter *certainly*, and as a practical matter, *all* workmen, would very largely accept treatment for injuries that was offered on the spot, if they had confidence that the treatment was thoroughly, effectively, and adequately done.

Mr. Chairman, we feel that it does not require any proof that there is a widespread dissatisfaction among the beneficiaries of the Workmen's Compensation Act as to the results to them of its administration. The annual flood of bills filed with the legislature, asking its amendment, is pretty conclusive of this. We know, as physicians closely concerned with an important phase of the administration, that among the reasons for dissatisfaction is the compulsion placed on the workman to do something he does not want to do, and what he thinks he ought not to be compelled to do, viz.—go to a doctor in whom, whether rightly or wrongly, he has no confidence. We are satisfied that, unless he is given the right, the only result will be that the act will come more and more into disrepute, and, as is happening every day in the experience of doctors in active practice, the workman will sacrifice his benefits of medical attendance under the act, and entrust the care of his injuries to the doctor with whom he has the closest of personal relations, that of doctor and patient, rather than go to one who may be unknown, and in whom from the very fact there is a lack of the confidence very essential to speedy restoration to health and strength; even though it results in a practical gratuity to the corporations, whose dividends depend, in part at least, on the saving and cutting down of that very medical expense.

Harvard Medical School.

MEETING FOR THE AWARD OF ACADEMIC DISTINCTIONS.

On Monday, February 26, 1917, at the Harvard Medical School, were held exercises in connection with the awarding of honors to students of medicine for the current year.

The meeting was under charge of President Lowell. In his introductory remarks, Mr. Lowell compared the practice of European countries with that of America in paying attention to the achievement of scholarship. He dwelt upon the American rule which regards success in any walk of life as success in life generally. Mr. Lowell spoke further regarding the seriousness of our present international situation, and of the importance of the rôle the medical fraternity must play in case of hostilities.

PRESIDENT LOWELL'S OPENING ADDRESS.

It has long been the custom in the older countries of the world to pay some attention to achievements of scholarship. You know very well that the professions in the older countries are based upon an elaborate system of competition. The competition is keen. Those who fail, fail hopelessly. Those who succeed have honors poured upon them. We have rather thought as a rule that we could go on

a basis of democracy—that men are not only born equal, but that they remain equal. But in this it is no more true than that they are born equal. We like to think of all people as just alike. I have always felt that for a profession, the European system was much better, and when we meet here today, we meet to some extent to emphasize that fact, to emphasize the very fact that there is something about the best in every profession which stands out and which is worth striving for. No man would be so unwise as to expect that the honors received in school were exactly in proportion to those received in life. Nevertheless, it is true that there is a tendency for a man who would achieve success in any walk, to achieve success. But we really mean more than that. We want to point out that there is something about the very best in every profession which is eminently worth striving for, and there is no profession in which that is more true than in the medical, and in a certain way at the present time one expects less of the man who is not a doctor and has no right to know the intricacies of the profession. Just at this time one speaks with a certain solemnity of feeling because we may be on the eve of a great war. We have just sent across the ocean now doctors and nurses for a unit with a British Expeditionary Force in France, and just as we are meeting here together those men are entering the danger zone. If it goes further and war breaks out here, we shall have to be calling upon all you men to come out and take your share of work, and it will be an opportunity for the medical profession to show what it can do under conditions such as the world has never seen before, and to which the men are doomed now from the other side.

President Lowell next introduced Dr. William H. Thayer of Baltimore, who delivered the chief address of the day, which will be published in full in a later issue of the JOURNAL.

Following Dr. Thayer's address, Mr. Lowell then awarded the certificates, giving also the list of those elected to Alpha Omega Alpha, and special mention of two students for foreign service.

PRESIDENT LOWELL'S CLOSING ADDRESS.

You are probably all aware how the American educational system was invented. It was invented by a man who took the idea from a sausage factory. The young mind is first killed, and then put through a process which is just the same for everybody, and is supposed to turn out sausages of a mediocre grade, but, as Dr. Thayer has pointed out to you, the whole difficulty comes from the fact that there is not time enough to go around. There is more time needed everywhere. Primary school wants more time; secondary school wants more time; college does not want to give up time and the medical school needs more time. There is only one way logically to meet the situation, and that is one which I commend particularly to the medical profession, and that is to lengthen seriously the period of human life. There is one difficulty, however; if you lengthen life you lengthen it at the end. You cannot lengthen it at the beginning very well, and the end is not worth having. To make life more valuable you must tuck in more in the middle, and what I want to impress upon students of medicine is that they put that time in between the ages of sixteen and twenty; I may say even younger, between the ages of twelve and twenty—that is the time when we really need more time. Maybe that

cannot be done. What is time? Well, supposing everything in the world today travelled twice as fast as yesterday, as, for instance, the sun and the clock. If the sun moved more rapidly and the pendulum of the clock moved more quickly, we should know it was faster because it seemed faster. But suppose your mind also worked twice as fast, how would you know it was faster? You would not, because you have nothing to compare it with. Time is nothing but the rapidity of the processes of the human mind. If you could speed up the work of the human mind at this time, you would have added years to life at just the moment when it is most needed. It must be possible to increase the working of the human mind, because whenever an action is produced in one direction, an opposite action has to be produced in another. The American system has slowed down the human mind, so it must be possible to reverse this. I shall now have to conclude and present the certificates.

Fourth Year.

Frank Garm Norbury, A.B., A.M., John Harvard Fellowship
Francis Brown Berry, A.B., John Harvard Fellowship

Third Year.

Reginald Myers Atwater, A.B., John Harvard Fellowship

Second Year.

Lyman Gilder Richards, A.B., John Harvard Fellowship
Samuel Ayres, Jr., A.B., John Harvard Fellowship

And further, certificates, similar to those given to holders of John Harvard Fellowships, are awarded to the following students of equally high rank, but not eligible for John Harvard Fellowships, being holders of scholarships:

Fourth Year.

Alfred Cyril Callister, A.B., Edward M. Barringer Scholarship
William Robert King, S.B., Charles Pratt Strong Scholarship
Edward Sawtelle Welles, S.B., Isaac Sweetser Scholarship

Third Year.

Willard Cole Rappleye, A.B., Joseph Pearson Oliver Scholarship

Following is a list of the men who have been elected members of the Alpha Omega Alpha:

Spring of 1916.

Frederick Ronald Brown, A.B.
Alfred Cyril Callister, A.B.
William Robert King, S.B.
Frank Garm Norbury, A.B., A.M.

Fall of 1916.

Francis Brown Berry, A.B.
George Lawrence Chaffin, A.B.
John Ross Marshall, A.B.
Edward Sawtelle Welles, S.B.

Special Mention.

Tracy Jackson Putnam, A.B., American Ambulance, Croix de Guerre
 Arthur Melville Goulding, A.B., Aviator

A FUND FOR THE STUDY OF PTOMAINÉ POISONING.

It is reported that the National Canners' Association has recently offered to Harvard University a fund of \$20,000 a year for three years for the investigation of ptomainé poisoning, with special reference to canned goods. This investigation is to be carried out at the Harvard Medical School under the direction of Dr. Milton J. Rosenau, professor of preventive medicine and hygiene.

"The University accepted the offer on the understanding that the investigation shall be conducted and the results published with entire academic freedom. It is believed that the results will be of great scientific and practical value, not only to the people of the United States, but throughout the world. This is the first comprehensive and painstaking effort to study this subject ever undertaken by a scientific institution."

The general researches are being organized under the supervision of the National Academy of Sciences.

Book Reviews.

Syphilis. By LLOYD THOMPSON, Ph.B., M.D., Physician to the Syphilis Clinic, Government Free Bath House; Visiting Urologist to St. Joseph's Hospital; Consulting Pathologist to the Leo N. Levy Memorial Hospital, Hot Springs, Arkansas; First Lieutenant, Medical Reserve Corps, United States Army; Member of the American Urological Association and the American Association of Immunologists. Octavo, 415 pages, with 77 engravings and 7 colored plates. Cloth, \$1.25, net. Lea & Febiger, Publishers, Philadelphia and New York. 1916.

Thompson, of Hot Springs, Arkansas, takes the ground that syphilis is no longer to be considered a genito-urinary or a dermatological disease, but one requiring knowledge in all fields of medicine; further, that it is upon the genito-urinary specialist that the burden of responsibility should rest, for the reason that it is he who usually sees syphilis at the beginning, and if his work is well performed there should be no need for the others in most cases; a dictum that will not, we think, enjoy universal acceptance. The book aims at dealing with the whole subject of syphilis in all its aspects, a

yeoman's task, that cannot be satisfactorily performed within the limits of a comparatively small treatise; yet as a compendium that emphasizes fully all the recent advances in the subject, it is worthy of much approbation. The chapter on laboratory diagnosis occupies fifty-four pages, which shows the modern importance of this branch of the subject. The chapter on treatment is also fully developed in the light of the newer and more complicated procedures by intravenous injection. It is pleasant to note a healthy conservatism in the author's attitude towards new methods that have not as yet been approved by experience.

Diseases of the Skin. New (8th) Edition, Revised. A Treatise on Diseases of the Skin. For the use of advanced students and practitioners. By HENRY STELWAGON, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Eighth edition, thoroughly revised. Octavo of 1309 pages, with 356 text-illustrations, and 33 full-page colored and half-tone plates. Philadelphia and London: W. B. Saunders Company. 1916.

The eighth edition of Dr. Stelwagon's well known treatise, which first appeared in 1902, contains new articles on occupational dermatoses, paraffinoma, purpura annularis, teleangiectodes, xanthoma elasticum, and erythema ophryogenes, while many other subjects have been altered and enlarged. Thirty-five new cuts of uniform excellence are added in this edition. This textbook remains the most valuable up-to-date general reference book for both the specialist and the general practitioner who has a good foundation in dermatology.

The Practice of Gynecology. Sixth Edition Revised. A Text-Book on the Practice of Gynecology. For Practitioners and Students. By W. EASTERLY ASHTON, M.D., LL.D., Professor of Gynecology in Graduate School of Medicine of the University of Pennsylvania. Sixth edition, thoroughly revised. Octavo of 1097 pages with 1052 original line drawings. Philadelphia and London: W. B. Saunders Company. 1916.

The new edition of this well known text book on the practice of gynecology needs no extended review. The general character of the work is unaltered, and in the revision are incorporated numerous changes made necessary by recent progress.

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126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

INDUSTRIAL HEALTH INSURANCE.

THE Committee on Health Insurance Instruction of the Middlesex South District, of which Dr. Charles E. Mongan is chairman and Dr. Frank E. Bateman secretary, desires to call attention to a report published in the issue of the *Illinois Medical Journal* for March, 1917, on "Objections to Social or Compulsory Health Insurance." This report was made by a committee on health insurance to the council of the Chicago Medical Society on February 13, 1917, and has been issued in the form of a reprint consisting of sixteen closely printed pages. This reprint, unfortunately, seems too long for republication in full in the columns of the JOURNAL, but it is easily accessible to interested members of the Massachusetts Medical Society in the current number of the *Illinois Medical Journal*. A number of reprints have also been ordered and may be had free of cost, on appli-

cation at the office of the BOSTON MEDICAL AND SURGICAL JOURNAL.

In brief, the report summarizes the bill and plan of the American Association for Labor Legislation as introduced in Illinois and in similar form in other states. The report describes this bill as unsolicited and objectionable to those most interested, limited in scope, premature and unnecessary. It is maintained that poverty is not the cause of disease, and that the prospective establishment of prohibition in Illinois will do away, in a large measure, with the need, if any now exists, of health insurance. Health insurance, it is held, has proved unsatisfactory in Europe, and will extend the abuse of medical charity in this country. The bill, as proposed, is believed to be not comprehensive, and to be adverse to the interests of employers and employees. The committee making the report believes that the proposed health insurance legislation will not decrease poverty, will adversely affect physicians' incomes, will lower the professional moral tone, decrease professional proficiency, destroy the incentive to medical research and make a dissatisfied profession. From the beneficiaries' point of view, the committee believes that health insurance would be productive of malingering, would destroy the personal relationships between patient and physician, would not improve the public health, and would result in class distinction. The committee, therefore, believes the project subversive of public morals, tending to pauperize its beneficiaries, and unconducive to ambition and individual effort. It is based on exploitation of the medical profession, at whose expense its experiment will be made. Labor conditions in Illinois, it is believed, do not require such legislation. Care of the sick poor should be a community responsibility. The plan for undertaking it by health insurance is an economic waste, prohibitive in cost and productive of bureaucracy. In conclusion, the committee regards it as a dangerous political movement, indefinite in its provisions, un-American, and subversive of the American ideals of democratic government. Finally, upon these findings, the committee passed a resolution urging upon the physicians of Illinois that they do not favor the enactment into law of any of the proposed health insurance measures, holding them unnecessary, undesirable, pernicious and against the best interests of the people.

The committee making the report, of which the above is a brief abstract, consists of Dr. Charles J. Whalen, chairman; Dr. J. R. Ballinger, secretary; and Drs. E. H. Ochsner, C. B. King, G. Apfelbach, W. O. Krohn, K. Zurawski, S. V. Balderston, B. V. Fowler and A. W. Seidel. There is reason to believe that this report is practically identical with that of the Health Insurance Committee of the Illinois State Medical Society.

In conjunction with this strongly adverse report, the attention of physicians is directed also to a report on social insurance, with special reference to compulsory health insurance, prepared for the committee on insurance of the Chamber of Commerce of the state of New York, by its executive officer, Dr. John F. Crowell, and published as a supplement to the *Monthly Bulletin of the Chamber of Commerce*, for February, 1917. This report is an elaborate and scholarly investigation of the entire subject, covering 92 quarto pages, and may be obtained on application to the New York Chamber of Commerce, 65 Liberty Street, New York City. It deals largely with the Mills bill, the particular form in which industrial health insurance has been brought before the New York State Legislature. At its regular monthly meeting on February 1, 1917, the New York Chamber of Commerce unanimously adopted a preamble and resolutions from its committee on insurance, describing Dr. Crowell's report as a most comprehensive, judicial and statesmanlike treatment of health insurance, and continuing as follows with reference to the attitude of the Chamber of Commerce toward the proposed legislation:

"Whereas, The bill in question contemplates the creation of a very large overhead charge to be paid by the state, and commits the state to the payment in addition of one-fifth of the funds necessary to carry out the indemnity provisions of the bill; and

"Whereas, The state is now over-burdened with taxation, and the committees of the legislature having the matter in charge are at a loss to know how to raise increased revenues for the current year; and

"Whereas, The proposed compulsory health insurance bill will lay a burden upon the taxpayers of the state which the proposers of this bill have not assumed even to estimate; and

"Whereas, Admitting that an obligation rests on the community and the industries of the community to take care of employees who are unable to work through sickness, and who, by reason of small wage, have not been able to make

provision against that contingency, it is not clear from the facts in our possession that this or any similar plan will discharge that obligation; and

"Whereas, On the contrary, the deductions made from facts assembled by Dr. Crowell indicate clearly that such measures are chiefly palliative and do not go directly to the seat of the difficulty; and

"Whereas, The city of New York particularly has had a very distressing experience in entering into obligations to pay pensions without first ascertaining actuarially the cost of such contracts, and finds itself now in a most humiliating position; and

"Whereas, In the judgment of this committee no bill should be presented to the legislature until after a report by a competent commission, appointed for that purpose, has been made; and

"Whereas, In the judgment of your committee, any plan for health insurance should put the emphasis on the prevention of sickness and not on the payment of claims; and

"Whereas, In the opinion of your committee, the expense of sickness, allowance for medical attendance, etc., should be borne by the employer and the employee, in other words, by the trade or occupation involved, in equitable proportions, and the state should in no event pay more than the expense of supervision; therefore, be it

"Resolved, That this Chamber is opposed to the passage of Senate bill No. 69, and opposed to the passage of any similar bill at this time.

"Resolved, Further, That this chamber favors the creation by the legislature of a commission to include, in addition to a proper number of legislators, representatives of business, of capital and labor, one or more physicians, a health officer, an economist, a lawyer, an actuary, and a social worker or sociologist. The duties of the commission should be to investigate the condition of employees, particularly in the various trades; to ascertain whether they are paid a living wage; to investigate the conditions under which they live; and the extent to which, in their judgment, sickness and accident can be reduced by increased activity on the part of existing agencies of the state government, and to ascertain, as nearly as may be, what the cost of provisions similar to those laid down in Senate bill No. 69 will be, if divided equitably between the employer and the employee, and what the cost to the state will be if it assumes the entire expense of supervision and administration."

These two reports, representing certain phases of the investigation of the industrial health insurance problem in two other states, are commended to the thoughtful attention and consideration of the medical profession in Massachusetts as evidence on one side of the important legislative proposition now under consideration

in Massachusetts, both sides of which the JOURNAL has undertaken and endeavored fairly to represent to the profession until a wise and equitable decision and solution of the problem can be reached.

THE AMENDED WORKINGMEN'S COMPENSATION ACT.

IN another column of this issue of the JOURNAL we publish a report of the argument of the Committee on Workingmen's Compensation of the Massachusetts Medical Society in favor of the amendment to the Workingmen's Compensation Act, now before the Massachusetts Legislature. This amendment (Senate bill 135) is the result of the efforts of this Committee in conference with the parent Committee on State and National Legislation. The proposed statute, the text of which was published on page 146 of the JOURNAL for January 25, 1917, was prepared with the aim, as expressed in the report of the committee, that "the new wording must make a definite improvement in the Act, not only for physicians, but for all concerned in it." The committee believes that the result "is equitable and just, and deserves the active support of every physician in Massachusetts."

It is presumably unnecessary to point out that Senate bill 135, on Workingmen's Compensation, is entirely distinct from the Young Industrial Health Insurance bill, although an indiscriminate use of terminology in these subjects has often confused the principles involved.

MEDICAL NOTES.

OPPORTUNITY FOR YOUNG PHYSICIANS IN PUBLIC HEALTH SERVICE.—According to a statement just issued by Surgeon-General Rupert Blue, young medical men between the ages of 23 and 32 will be given an opportunity each month to demonstrate their fitness for admission to the grade of Assistant Surgeon in the U. S. Public Health Service. There are several vacancies in the Government's mobile sanitary corps, which is now in the 119th year of its existence, but in order to be recommended to the President for commission, a physical and professional examination must first be passed. As the tenure of office is permanent and the Public Health officers are ordered to duty in all parts of the world,

they are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate. Boards will be convened at Washington, Boston, New York, Chicago, St. Louis, Louisville, New Orleans and San Francisco, but permission to take the examination must first be obtained from the Surgeon-General. The examination is searching, and includes, in addition to the various branches of medicine, surgery and hygiene, the subjects of the preliminary education, history, literature and the natural sciences. The commissions will be issued as Assistant Surgeon, and after four years of service, the young officers are entitled to examination for promotion to the grade of Passed Assistant Surgeon, and after twelve years of service to another examination for promotion to the grade of Surgeon. The annual salaries are: Assistant Surgeon, \$2000; Passed Assistant Surgeon, \$2400; Surgeon, \$3000; Senior Surgeon, \$3500; Assistant Surgeon-General, \$4000. When the Government does not provide quarters, commutation at the rate of \$30, \$40, and \$50 a month, according to grade, is allowed. All grades receive longevity pay, that is, 10% in addition to the regular salary for every five years, until the maximum of 40% is reached. When officers travel on official duties they are reimbursed their actual traveling expenses.

NATIONAL COMMITTEE FOR MENTAL HYGIENE.—The Ninth Annual Meeting of The National Committee for Mental Hygiene was held February 7 in New York City. Mr. Otto T. Bannard, Treasurer, announced that gifts amounting to more than \$30,000 for general expenses had been contributed during the past year by four donors, one of whom had pledged \$100,000 toward an Endowment Fund that is being raised. The Rockefeller Foundation contributed \$34,000 for special purposes, such as surveys of conditions among the insane and feeble-minded.

Short addresses were given by Dr. Walter E. Fernald on "Supervision of the Feeble-minded in the Community"; Dr. William A. White, "Influence of Mental Hygiene upon Methods of Dealing with Crime and Criminals"; Dr. William L. Russell, "Some of the Indirect Results Which May be Expected to Follow Our Surveys of the Care and Treatment of Mental Diseases"; Professor William H. Burnham, "The Role of Mental Hygiene in Education"; Dr. E. E. Southard, "The Community as a Unit for Mental Hygiene Work"; Dr. Henry R. Stedman, "The Teaching of Mental Hygiene in Medical Schools."

Dr. Thomas W. Salmon, Medical Director, Dr. Frankwood E. Williams, Associate Medical Director, and Mr. Clifford W. Beers, Secretary of the Committee, reported on the work of the past year. Surveys have been completed in the states of California, Colorado, Connecticut,

Georgia, Louisiana, Pennsylvania, South Carolina, Tennessee, Texas and Wisconsin, and are now in progress in the cities of Chicago and New York. State societies for mental hygiene are now organized in sixteen states, while steps have been taken towards the organization of societies in several other states. During the coming year emphasis will be laid upon the educational work of the Committee. A feature of this work will be the publication of a quarterly journal, *Mental Hygiene*, the first number of which was issued during the past month.

The following officers for the ensuing year were elected: Dr. Llewellys F. Barker, president; vice-presidents, Prof. Charles W. Eliot, Dr. William H. Welch; treasurer, Otto T. Barnard; medical director, Dr. Thomas W. Salmon; associate medical director, Dr. Frankwood E. Williams; secretary, Mr. Clifford W. Beers; executive committee, Dr. August Hoch, chairman; Dr. George Blumer, Prof. Stephen P. Duggan, Dr. William Mabon, Dr. William L. Russell, Dr. Llewellys F. Barker, Dr. Walter E. Fernald, and Mr. Matthew C. Fleming; finance committee, Prof. Russell H. Chittenden, chairman, Mr. Otto T. Barnard, Mr. William J. Hoggson, Dr. William B. Coley.

SCARLET FEVER IN CHICAGO.—It was reported on March 6 that there were 2000 cases of scarlet fever in Chicago, and the total number of beds available in contagious hospitals, both in city and county institutions, does not exceed 450.

KRAUSS MEMORIAL INSTITUTE.—In 1910 the late Dr. G. Krauss of Munich bequeathed to that city a sum equivalent to nearly \$400,000 for the establishment, as a memorial to his father, of an institution for mechanical and other forms of orthopedics, especially those practiced by the elder Krauss. This building has recently been completed and stands on the grounds of the University Orthopedic Clinic at Munich, with which it is affiliated. It is in charge of Professor Friedrich Lange.

EUROPEAN WAR NOTES.

PESTILENCE IN RUSSIA.—Report from Berlin by way of Copenhagen, on February 14, describes an extensive epidemic pestilence in Russia, at Rostow on the Don, which is said already to have spread over the whole of southern Russia. The nature of the pestilence is said to resemble that of bubonic plague. The number of cases is not reported.

DISPOSITION OF AMERICAN SURGICAL UNITS IN GERMANY.—In a recent issue of the *JOURNAL* we noted the recall of the American Surgical Units serving in Germany and Austria. Report from Copenhagen, by way of London, states that the unit from Naumburg reached Copenhagen on March 1, and the units from Oppeln and

Deutsch-Eylan on March 3, and that these units will all sail for the United States on the first safe opportunity. The unit which left Graudenz at the beginning of February has returned to that city and resumed work, which it will continue for the present.

APPOINTMENT FOR DR. JOSEPH BLAKE.—Report from Paris on March 1 states that Dr. Joseph A. Blake has recently accepted an invitation from the French government to become chief of the hospital built and conducted in Paris by the late Dr. Eugene Doyen.

"This institution, which is one of the finest in Paris, will reopen, with Dr. Blake in charge, in another month, and will be conducted as a war hospital under the American Red Cross. It will be the first hospital in France to come officially under the stars and stripes, for while the American ambulance at Neuilly is an American undertaking, supported by American funds, it is organized solely under the auspices of the American doctors who practiced in Paris before the war.

"Incorporated as part of the new institution will be the Robert Walton Goelet research laboratories, under the direction of Dr. Kenneth Taylor, the American bacteriologist, who has been associated with Dr. Blake since the beginning of the war. Dr. Blake is now finishing his work at the British Hospital in Ris-Orangis, where he became chief surgeon after the severance of his relations with the Neuilly institution, over a year ago. Meanwhile, the Doyen Hospital is being renovated and changed to meet war requirements.

"The government's invitation to Dr. Blake, which, perhaps, is the greatest honor that could be conferred upon an American surgeon practicing abroad, came as a result of his brilliant record at both Neuilly and Ris-Orangis."

BRITISH NEW YEAR HONORS FOR PHYSICIANS.—In a recent issue of the *JOURNAL* we noted the honor conferred upon Dr. Alfred Keogh by the British Government for his reorganization of the army medical service since the outbreak of the war.

"A supplementary list issued early last week by the Prime Minister includes the names of Dr. Robert Armstrong-Jones, consulting physician on mental diseases to the Military Forces in London, who has received a Knighthood; Dr. Arthur Newsholme, C.B., Chief Medical Officer to the Local Government Board, who has been promoted to a Knighthood in the Order of the Bath; and Sir Robert William Burnet, physician to His Majesty's Household, who has been made a Knight Commander of the Royal Victorian Order."

DECLINE OF BIRTH RATE IN SCOTLAND.—At a recent meeting in Edinburgh, Dr. Maxwell Williamson called attention to the alarming recent decline of the birth rate in Scotland.

"There were 5700 births in Edinburgh in 1913, and only 5300 in 1915. The death rate was 16.1 per 1000, and the general uncorrected birth rate 16.3, so that the population was stationary. The illegitimate birth rate had risen from 7.6 in 1913 to 8.4 in 1915; this compared with 6.9, the rate for the whole of Scotland. It must be remembered that illegitimate children have a much poorer prospect of life than legitimate."

A PROBLEM IN RATIONS.—The *Lancet* has recently published the following problem as illustrating the type of knowledge expected of surgeons in time of war. The importance of its correct solution is obvious. It may well be wondered how many American physicians are competently equipped with knowledge of this sort in the event of a sudden demand for it:

"A lifeboat containing 50 souls is afloat far from land; the probabilities are that it will not be picked up, but that it can reach land at the end of 14 days. The occupants of the lifeboat comprise: 5 A.B. sailors, including an A.B., the ship's doctor, who takes command; 10 men passengers, of whom 4 are invalid; 15 women, of whom 3 are 'as strong as men'; 20 children. The provisions in the boat are as follows: one puncheon of water, one anker of rum, 400 lbs. of bread, 250 lbs. of meat, 75 lbs. of sugar.

"The doctor decides at once to ration these provisions. What scale will give him the best chance of bringing his charge to land without loss of life?"

WAR RELIEF FUNDS.—On March 10 the totals of the principal New England relief funds for the European War reached the following amounts:

Jewish Fund	\$1,667,806.00
Belgian Fund	532,489.57
French Wounded Fund	205,036.94
Armenian Fund	161,032.17
French Orphanage Fund	85,353.41
Surgical Dressings Fund	77,747.47
Polish Fund	63,109.69
Italian Fund	33,929.44
LaFayette Fund	23,751.03
Boston Ambulance Fund	5,022.00

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday noon, March 3, 1917, the number of deaths reported was 299, against 292 for the same period last year, with a rate of 20.19, against 20.02 last year. There were 56 deaths under one year of age, against 37 last year, and 101 deaths over 60 years of age, against 104 last year.

The number of cases of principal reportable diseases were: diphtheria, 78; scarlet fever, 47;

measles, 123; whooping cough, 4; tuberculosis, 55.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 14; measles, 1; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 5; scarlet fever, 5; tuberculosis, 19.

Included in the above were the following deaths of non-residents: scarlet fever, 3; tuberculosis, 2.

HEALTH OF BOSTON SCHOOL CHILDREN.—At a recent meeting of the Boston School Committee, Dr. William H. Devine, director of medical inspection, presented a report of the examination of 89,175 pupils during the current year. Of these, 14,016 were found to have defective vision.

By the use of glasses 3580 pupils have normal vision, and only 2450 children have defective vision which the use of glasses does not overcome.

The hearing of 87,331 children out of 89,108 tested, was normal in both ears. The number having defective hearing of one ear was 810, and 705 had both ears defective.

THE BOSTON MEDICAL LIBRARY.—The forty-first annual report of the Boston Medical Library states that during the year 1916 there were added to the 85,963 volumes already in the Library, 3477 volumes, making a total on December 31, 1916, of 89,440. There were added in the same period 1266 pamphlets, making a total of 59,311 pamphlets. The valuable collection of the late Dr. B. Joy Jeffries on color blindness, consisting of books, pamphlets, monographs, innumerable newspaper clippings and a card bibliography, has been given the Library. Arrangements have been made to complete files of current foreign periodicals which have been interrupted by the war, when peace conditions are restored.

INSTRUCTIVE DISTRICT NURSING ASSOCIATION.—The annual meeting of the Instructive District Nursing Association was held on March 5. The speakers for the evening were Dr. Francis W. Peabody, Miss Mary Beard, director; Miss Grace O'Brian, associate director; Miss Anne M. Devanny, supervisor; and Miss Anne Hervey Strong of Simmons College.

The following officers were elected for the coming year: Mrs. Ernest Amory Codman, president; Miss Gertrude W. Peabody and Miss Emily G. Denny, vice-presidents; Ingersoll Bowditch, treasurer; Miss Ellen Hale, secretary; Mrs. W. A. L. Bazeley, Mrs. William H. Coolidge, Mrs. Livingston Davis, Mrs. R. L. DeNormandie, Mrs. Henry Ehrlich, Mrs. W. T. Gardiner, Mrs. J. L. Grandin, Jr., Mrs. Frank H. Monks, Mrs. R. B. Osgood, Mrs. Mary Pamela Rice, Mrs. Stephen Rushmore, Mrs. Hobart Winkley, Miss Mary E. Batchelder, Miss Rosamond Bradley, Miss Ellen Bullard, Miss Geor-

gina S. Cary, Miss Alice DeFord, Miss E. Denny and Miss Nora Saltonstall, managers.

HOSPITAL REQUESTS.—By the will of the late Mrs. William B. Smith of Cambridge, Mass., the Boston Floating Hospital is the recipient of a gift of \$2000, and the Industrial School for Crippled and Deformed Children, \$1000.

TUBERCULOSIS WORK IN FRAMINGHAM.—Dr. Donald B. Armstrong, the executive officer in charge of the experiment of eradicating tuberculosis, recently addressed the nurses of the Framingham Hospital on their part in the movement. He said in part that the continuing of the routine nursing work of the community, as done by the anti-tuberculosis nurse, the school nurse and the hospital nurses, was absolutely essential to the working out of the demonstration. Along this line, in addition, Dr. Armstrong stated that a public health nurse for the Board of Health would be a most valuable addition to the community's nursing staff.

In the second place, it was pointed out that the help of nurses would be needed in special phases of the work, especially, perhaps, in the canvass for illness, tuberculosis and other things, which the Community Health Station now plans to make in April or May.

Work of this character in Framingham, possibly supplemented by physicians on the one hand and the agents of the several companies on the other, would be most valuable in shaping the program for disease prevention and health creation. Dr. Armstrong emphasized that it was necessary to know how much sickness there was in Framingham, on a fairly accurate basis, before it could be attacked intelligently.

BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS.—The thirteenth annual report of the Boston Association for the Relief and Control of Tuberculosis states that its Health in Industry Committee is meeting with encouragement and success. It has assisted in establishing nursing service in four factories, of which two manufacture candy, one electrical supplies, and one rubber clothing. One large laundry has also established such service, and similar plans are now under way for other factories and groups of factories. The secretary has given eighteen noonday health talks to a total of about 1000 employees, the Health in Industry exhibit has been shown in 19 different places and seen by about 130,000 people, and 6000 educational leaflets have been distributed at exhibits and lectures. The exhibit has been in almost constant use, not only in Boston but also in ten other cities of the state. The Open-Air School exhibit, consisting of about 100 photographs of such schools, collected from different parts of the country, has also been used outside of the city. Over 47,000 pieces of literature in English and foreign languages have been distributed. The Association owns one

moving picture film, "The Awakening of John Bond," which has been used in connection with the Park Shows, and also loaned for use in other parts of the State. A new film in two reels, "The Great Truth," prepared by the National Association for the Study and Prevention of Tuberculosis, has been recently purchased and will be ready for use about the first of December.

BUTLER HOSPITAL, PROVIDENCE, R. I. The seventy-third annual report of the Butler Hospital states that during the year there have been admitted 158 patients, 70 men and 88 women, making the whole number under treatment 301. The discharges numbered 144, 62 men and 82 women. Of the discharges, 7 patients were unchanged, 38 had recovered, 59 were improved, 24 were unimproved, and 16 had died. Of the admissions, 55.7% were voluntary.

The Massachusetts Medical Society.

ESSEX SOUTH DISTRICT.

The Essex South District Medical Society held a very successful meeting at the Elks House, Beverly, on the evening of March 1, 1917. The guests were Dr. Samuel B. Woodward, President of the Massachusetts Medical Society, and Dr. W. R. P. Emerson. Dr. Emerson gave a very practical paper on "The Care and Feeding of Delicate Children."

The Lynn Hospital Corporation recently voted to construct a new maternity building at a cost not to exceed \$75,000. Dr. C. C. Sheldon, for many years superintendent of the Lynn Hospital and senior member of the medical visiting staff, has recently asked to be retired. Dr. J. Robert White has recently resigned from the out-patient department of the same hospital, and given up private practice to accept a naval appointment.

P. BENNETT, M.D., *Secretary,*
Essex South District.

Miscellany.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR JANUARY, 1917.

GENERAL DISCUSSION.

There has been a marked decrease in the total number of cases of communicable disease for the month of January as compared with the corresponding month for 1916. This decrease from

7645 to 6464 cases is confined chiefly to scarlet fever and whooping cough.

The cases for January 1917, however, disclose an increase of 1760 over those reported during December, 1916. For the corresponding months last year the increase was 2224 cases. This increase in communicable diseases resembles last year's in that the diseases affected are measles, diphtheria, tuberculosis, whooping cough and scarlet fever, the same as in 1916.

Anterior Poliomyelitis. This disease has returned to the status which it had previous to last year's epidemic. The 14 cases reported during the month were distributed among 11 communities, as follows: Abington (1), Boston (5), Easton (1), Haverhill (1) Lawrence (1), North Andover (1), Rockport (1), Shelburne (1), Somerville (1) and Springfield (1).

Anthrax. A case of anthrax was reported from North Adams. This case developed soon after handling the same lot of hides that caused the infection in the case in that city for December. Anthrax serum obtained from the Bureau of Animal Industry of the United States Department of Agriculture was given and the patient recovered.

Smallpox. The case of smallpox reported from Lee shows evidence, and the circumstances under which it occurred strongly suggest the probability that it is connected with the November, 1916, outbreak, by missed or unrecognized cases.

EPIDEMICS AND OUTBREAKS.

The month was noticeable for the small number of serious outbreaks of communicable diseases. The diphtheria outbreaks in Gardner and Webster which started in December continued into January.

Measles. A total of 1886 cases of measles reported for the month as compared with 1054 cases for December, 1916, was largely responsible for the increase in this month's communicable disease.

In Fall River measles continued to increase, a total of 293 cases being reported for the month, which is 53 more than the total number of cases for December. Investigation showed that in many communities no physician is called and the children are found to be attending school in the first stages of the disease; in this way spreading it among other children.

In general, due to the fact that medical aid is not called in, outbreaks of this disease acquire a start which is not easily overcome. Investigation by the State District Health Officers of outbreaks invariably disclose many cases which have not had medical attendance. In most instances these cases equal the number of cases in which a doctor has been called.

Whooping Cough. A better reporting of whooping cough is desirable, due to the high mortality as compared with other so-called minor diseases. Work along this line recently in

Swampscott uncovered 58 cases in January. It would seem that a similar line of investigation in other municipalities would undoubtedly show like results. Medical inspection of schools at the onset of an outbreak would then be of more value than after the school is well seeded with this disease.

Scarlet Fever. Several small outbreaks of this disease occurred which were handled by the local boards of health in their respective localities. The mildness of the disease produces a number of unrecognized cases and the outbreak persists, e.g., one outbreak of 10 cases was successfully traced to such a mild unrecognized case imported from another state.

Diphtheria. The outbreak in Webster continued during the early part of January until the taking of release cultures at the end of the illness and also of the contacts produced a marked diminution in the number of cases reported.

In Gardner the taking of release cultures from the families where a case of the disease existed disclosed a number of carriers of this disease which made up the majority of cases reported from Gardner during the month. A drinking faucet in a school, which the children used by placing their mouths directly in contact with it, seems to have been the contributing factor in the spread of the outbreak in the beginning.

A better control of outbreaks in schools at the beginning by culturing and immunization of contacts with antitoxin and the insistence of release cultures in these outbreaks, has kept the cases down to a low number. The use of the Schick test in locating susceptible individuals in outbreaks is to be encouraged, as it furnishes a definite foundation on which to base the immunizing doses.

RARE DISEASES.

Anthrax. Was reported from North Adams (1).

Cerebrospinal Meningitis was reported from Boston (4), Lowell (1), Milford (1), New Bedford (1), Northampton (1), Springfield (1) Ware (1) and Worcester (1).

Dysentery was reported from Fall River (1). *Dog-Bite* was reported from Brockton (1), Falmouth (1) and Lowell (2).

Glanders was reported from Springfield (1). *Malaria* was reported from Boston (1).

Septic Sore Throat was reported from Boston (15), Cambridge (1), Chicopee (1), Newburyport (1), Northampton (1) and Springfield (1).

Smallpox was reported from Lee (1) and Worcester (1).

Tetanus was reported from New Bedford (1) and Pittsfield (1).

Trachoma was reported from Boston (3), Lawrence (1), Lowell (1) and New Bedford (1).

Correspondence.

COMPULSORY HEALTH INSURANCE.

Worcester, Mass., March 4, 1917.

Mr. Editor:—

Make no mistake this time regarding medical legislation in Massachusetts. You have the results of your inertia and mental stasis in the Workmen's Compensation Act, which easily took thousands of dollars from your collective medical income, and, after doling out a small part to the certain few selected (not by any means selective) contract doctors, put the balance into the pockets of the companies writing accident liability insurance. Are you going to have another such hold-up clothed in the guise of paternal philanthropy, under the name of Compulsory Health Insurance, completely destroy your living and limit your ambition? Perhaps so, but not if you carefully read the so-called "Young Bill" which will be considered by the Massachusetts legislators shortly. Remember that this insurance movement is nation-wide, and that Massachusetts, Concord and Lexington were marked because of their rebelliousness and to that same rebellion to unjust oppression we owe our liberty-loving, democratic United States. This entire compulsory health insurance movement is foreign; foreign in its conception; foreign in its policy; foreign in its advocates, and foreign in its operation, and is against liberty of choice or selection to the wage earner, the doctor, druggist, nurse, undertaker, manufacturer and taxpayer. Twenty states vote this year on this foreign scheme of paternalism, so therefore let Massachusetts medical men blaze the trail of rebellion to its self-making and undemocratic conditions. Without the cooperation of the majority of the medical fraternity of Massachusetts, this bill or any of its offspring or imitators is doomed to oblivion. So, gentlemen, if each of the 6000-odd doctors in good old Massachusetts do nothing in favor of the bill, and will go on record with their local representatives in the legislature as unqualifiedly opposed, this will end the question. Most of us are satisfied to practice our profession in the respectable and reputable way we always have and, while we have our bad bills and our charities, we are fairly well satisfied with the established method of attending the sick without jeopardizing the future by advocating or neglecting to oppose any scheme that will mean a reversion to complete contract medical practice, either to the state or to any collection of individuals. My impression of perhaps the unwritten code of ethics of the Massachusetts Medical Society was, that we rather looked with disfavor on contract work, even if we did not declare absolutely against it, and now to have a plan that can subsidize our hospitals, medical associations and individual practices to the vagaries of brains not trained medically either in theory or practice, and especially not interested in a financial way, as it will be noted that the entire cost of pandering paternalism is to be paid for by the three supposedly interested classes, the wage earner two-fifths; the employer two-fifths, and the state (the taxpayers) one-fifth. Can you, with any microscope, detect where it costs the welfare worker, the philanthropist, the political economist or the college demagogue anything, but may land him in a good job in a supervising criticism of your work, your ability and your results? Medical men from their contact with disease are extremely tolerant of hysteria, but are we to let this tolerance put us in the hands of those entirely ignorant of our sacrifices and make our families possibly dependent upon the charity of the state? This particularly obnoxious bill (Young Bill) which claims to be an improvement over its predecessor, the Doten Bill, inasmuch as it gives some consideration to the medical fraternity, which the Doten Bill absolutely ignored, says that "any compulsory insured person can claim the services of any legally qualified physi-

cian, surgeon, hospital or dispensary, provided that they are on the registered panel." And, gentlemen, it says any of the above shall have the right to register on this panel, but it does not say what will become of him, of his practice or of his little ones if he cares to exercise his inborn right of independence, his well-learned lesson in American liberty, and his undying admiration for the constitution of the United States, that makes all men equal, and allows right of selection and free speech. If he is short-sighted enough to register on the panel, he must respond to the beck and call of any insured person, except in accordance with the rights of refusal given him by the regulations of the act, the specifications of which have not even been suggested, much less made explicit. Of course you know that the Insurance Commission can tell you the maximum number of patients you may treat and thus limit your success and ambition. Of course you will be sure of your pay, but your fee schedule is only on a visitation basis, but no limit is placed on the minimum of this basis. By the way, this may interest you (Quoted from Part ii, Sect. 5 of the Young Bill): "In case the fund or society is unable to furnish the whole or any part of the benefit provided in this section (on medical, surgical, dental and nursing attendance and treatment) it shall pay the cost of such service actually rendered by a competent person at a rate approved by the Commission." Another time where you may get so much on the dollar. In an attempt to hedge and possibly befool the issue, provision is made for a few doctors that do not care to register on the panel, and they can act under salary if approved by the Commission. To show you some of the power of the Commission, Part v, Sect. 7 says: "That on complaint and evidence that any physician or surgeon, practising under this act, is incompetent, neglectful of duty or dishonest, the Commission be empowered to suspend or debar such physician or surgeon from practice under the act, and the decision of the Commission shall be final." Pretty good when you have to defend your possible inability to be in two places at once on the complaint of some excitable, unreasonable patient. Once we had only to explain, but now we may be obliged to defend ourselves. I might go deeper into the subject and tell you that the medical profession is to be the dog upon which this theoretical experiment is to be tried. If it should not be successful, any of the other interested parties could easily resume their position in the world, but the medical practice you have been building up by years of study, experience and self-sacrifice has gone beyond recall, and you are either a helpless parasite on the government or a debutant in some new field of endeavor. Possibly enough has been said to arouse us from our apathetic lethargy and snug contentment to combat by legislative representation of trained legal gentlemen this Herculean strength that is massing around us and threatens our very existence, particularly when you know that no association of wage earners, no employer, and no city or town has asked that kind Cornucopia would open her horn of plenty and, in the dress of *Compulsory Health Insurance*, shower her beneficence indiscriminately on all, willing and unwilling.

CLARENCE F. DESMOND.

President, Physicians' Club of Worcester.

MEDICAL PREPAREDNESS.

War Department, Office of the Surgeon General.

Washington, March 3, 1917.

Mr. Editor:—

Should the country ever be engaged in war, the Medical Department of the Army in calling Reserve officers to the colors, wishes to cause as little hardship and sacrifice to the Reserve medical officers as may be consistent with the needs of the country. With this end in view the Department de-

sires that you bring to the attention of the profession at large the necessity of the city, county, and state medical societies organizing for the purpose of taking care of the practices of the officers of the Reserve who respond to a call for service. In England this plan has proven of great benefit. The idea of the Department is that the profession should organize upon a similar basis.

For example, should Dr. Jones be called to the colors, the local medical society, through its members, would take care of his practice during his absence. Upon relief from active duty his practice would be returned to him intact. Such a plan will cause no unnecessary hardship upon the officer responding to a call for service, while the absence of such a plan would penalize the officer who gives his service to the country in a crisis. The Department appeals to the patriotism of the profession, to protect the interest of those of the profession who may be called to duty in war.

For the Surgeon General,

Sincerely,
ROBERT E. NOBLE,
Major, Medical Corps, U. S. Army.

NOTICE.

LAWRENCE GENERAL HOSPITAL.—Physicians are invited to a demonstration, to physicians, and through them to the parents, of muscle training in the after treatment of infantile paralysis under the auspices of the Orthopedic Department of this hospital, under the charge of B. E. Wood, M.D., Wednesday, March 14, 1917, from 1 to 4 P.M. This is to be held through the courtesy of the Harvard Medical School Infantile Paralysis Commission, of which R. H. Lovett, M.D., of Boston, is Chairman, The State Board of Health, by the District Health Inspector, C. E. Simpson, M.D., is arranging the details. The demonstrations will be made by either A. W. Legg, M.D., or F. R. Ober, M.D., of Boston. You are invited to bring your cases and their parents.

J. FORREST BURNHAM, M.D.,
Secretary, Medical Staff.

SOCIETY NOTICES.

WORCESTER DISTRICT MEDICAL SOCIETY.—A regular meeting will be held in G. A. R. Hall, 55 Pearl Street, on Wednesday, March 14, 1917, at 4.15 P.M. The Society will be addressed on "The Ambulance Service in France," by Mr. Walter H. Wheeler, Harvard '18, and Mr. Luke C. Doyle, of Worcester. Both these gentlemen will speak of personal experiences, having recently returned from terms of active service at the front at Verdun and Alsace-Lorraine. Both have received the French Croix de Guerre. The addresses will be illustrated by lantern slides. In honor of this visit a full and prompt attendance is asked for.

The Secretary wishes to remind the Fellows of the petition once received with last month's announcement and to say that they must be filled and returned within the week to be of use to the Committee on Workmen's Compensation, which is fighting to relieve the workmen and the profession of the oppressive features of that law. Just now it is particularly necessary that pressure be brought on our representatives and senators to favor Senate Bill 135—whether the report of the Joint Judiciary Committee is favorable or not.

E. L. HUNT, Secretary.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY.—The next meeting of the New England Ophthalmological Society will be held at the Massachusetts Charitable Eye and Ear Infirmary, 233 Charles Street, Boston, Tuesday evening, March 20, at 8 o'clock.

W. HOLBROOK LOWELL, M.D., Secretary.

UNITED STATES CIVIL-SERVICE EXAMINATION.

DENTIST (MALE), INDIAN SERVICE,
MARCH 21, 1917.

The United States Civil Service Commission announces an open competitive examination for dentist, for men only, on March 21, 1917. A vacancy in the Indian Service at Large, at \$1,500 a year, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

The Office of Indian Affairs states that in addition to the salary mentioned the incumbents in these positions will be allowed actual and necessary traveling expenses, including sleeping-car fare, incidentals, and subsistence when actually employed on duty in the field. All dental supplies and instruments are furnished by the Government.

These employees will have no fixed place of abode, but will be required to travel from school to school as the needs of the service require.

Graduation from a recognized dental college is a prerequisite for consideration for this position.

Statements as to training and experience are accepted subject to verification.

Each applicant for this examination must be in good health and must attach to his application a statement concerning the number in his family and the number that will require accommodations at the Indian school or agency in case he receives appointment. He must also furnish to the examiner on the day he is examined a photograph of himself taken within two years. Tintypes will not be accepted, and the examination will not be given unless the photograph is presented to the examiner.

Applicants must have reached their twenty-fifth but not their fortieth birthday on the date of the examination.

This examination is open to all male citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the United States Civil Service Board nearest his home. Applications should be properly executed, including the medical certificate, but excluding the county officer's certificate, and filed with the Commission at Washington in time by the applicant. The exact title of the examination, as given at the head of this announcement, should be stated in the application form.

RECENT DEATHS.

JOE VINCENT MEIGS, M.D., died of cerebral hemorrhage at Lowell, March 9, 1917, aged 50 years. He was born in Lowell, January 22, 1867, was a graduate of the Lowell public schools and of the Jefferson Medical College, Philadelphia, in 1889, and had always practised in the city of his birth. Dr. Meigs was associate medical examiner under the late John C. Irish, and succeeded to the office of medical examiner in 1898. At the time of his death he was president of the Middlesex North District Medical Society and a Councilor of the Massachusetts Medical Society. He was on the medical staffs of the Lowell, St. John's and Lowell General hospitals, was a member of the Massachusetts Medico-Legal Society, and president of the Verick Club. He is survived by his widow and by two sons and a daughter.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

March 22, 1917

ORIGINAL ARTICLES

THE NEUROLOGICAL ASPECTS OF FOOD POISONING. <i>By Arthur Willard Fairbanks, M.D., Boston.</i>	413
SEMINAL VESICULITIS AND PROSTATITIS TREATED BY VESICULOTOMY AND PROSTATIC DRAINAGE. <i>By John H. Cunningham, Jr., M.D., Boston.</i>	422
FREEL-MINDEDNESS AS SEEN IN COURT. <i>By V. V. Anderson, M.D., Boston.</i>	429

INDUSTRIAL HEALTH INSURANCE

THE PROPOSED HEALTH INSURANCE LEGISLATION. <i>By Francis W. Anthony, M.D., Haverhill, Mass.</i>	431
A WEB PRELIMINARY TO THE ADOPTION OF ANY COMPULSORY HEALTH INSURANCE ACT. <i>By E. A. Codman, M.D., Boston.</i>	435

BOOK REVIEW

State Medicine (Health Insurance) <i>By Charles E. Mongan, M.D., Frank E. Bateman, M.D., and George A. Miles, M.D.</i>	438
--	-----

EDITORIALS

A PUBLIC HEALTH AGENT IN MASSACHUSETTS.	439
AN IMPORTANT LEGAL DECISION.	441
MEDICAL NOTES.	441

OBITUARY

ROBERT ALEXANDER DOUGLAS-LITHGOW, M.D.	442
HENRY DWIGHT HOLTON, M.D.	442
JOE VINCENT MEIGS, M.D.	443

CORRESPONDENCE

THE YOUNG BILL. <i>Frank E. Bateman, M.D.</i>	446
---	-----

MISCELLANY

WORKINGMEN'S COMPENSATION ACT.	444
NOTICES, RECENT DEATHS, ETC.	446

Original Articles.

THE NEUROLOGICAL ASPECTS OF FOOD POISONING.*

BY ARTHUR WILLARD FAIRBANKS, M.D., BOSTON.

THE neurological features of food poisoning seem to be a somewhat neglected subject in the domain of neurology.

This is perhaps because as a rule the dominant feature of the symptom-complex in these cases is that of a more or less marked gastro-enteric disturbance: nausea, vomiting, abdominal pain, diarrhoea and the varying degrees of physical prostration incident to such disturbance.

Careful scrutiny of the symptom-complex, however, even in such instances, reveals the fact that the nervous system by no means escapes implication.

Further scrutiny of the many cases reported, moreover, reveals the fact that there are some cases in which the predominant features of the symptomatology are neurological, while the gastro-intestinal phenomena are entirely subordinate and incidental, or may be entirely lacking.

In any consideration of this subject it is necessary to divide instances of food poisoning into those wherein the poison is an intrinsic or natural constituent of substances used as food, and those wherein the poison is of extraneous origin, and does not naturally occur in the food.

*Read before the Boston Society of Psychiatry and Neurology, Feb. 17, 1916.

Among the intrinsic poisons, we have to consider those that are found in fish, shell-fish, fungi, and certain vegetables, such as potato.

First among poisonous fish are those of the tetrodon and allied genera. They are widely disseminated along the coasts of Japan, China, the East Indies and Africa. While long known to be poisonous, they are not infrequently eaten, either through mistake or ignorance. This is especially apt to occur because many species of this genus, if not all, are edible in part, but not entire. Thus the mussel may be eaten if the roe, the ovarian tissue and the liver are carefully removed.

The poison contained in these fish has been studied by Takahashi and Inoko,¹ Miura and Takesaki². It resembles the curare type of poison. It is not destroyed by cooking, although prolonged cooking materially weakens it. Tahara isolated two toxic substances, one crystalline, tetrodonin, the other amorphous, tetrodonic acid. Their action on animals is that of a rapid paralyzant of certain parts of the central nervous system, especially the respiratory centre, with a vaso-motor paralysis, and a curare-like paralysis of the motor nerve terminations. The heart is not directly affected. The symptoms produced by this form of poisoning in the human being are headache, obstinate vomiting, severe dyspnoea, cyanosis, contracted pupils, and progressive general paralysis, including the speech and the sphincters; ending in death in from $\frac{1}{2}$ to 3 hours (ichthyismus paralyticus). Occasionally paraesthesiae and blindness are complained of.

In animals there occur restlessness, vomiting

and other gastro-intestinal irritation, salivation, severe dyspnoea, progressive paralysis, and death by respiratory paralysis. Small amounts cause only light parietic symptoms.

In frogs, paralysis of the nerve-endings and spinal cord centres, with marked retardation of heart action.

Some idea of the virulence of this poison may be inferred from the following cases: While off Cape of Good Hope, a boatswain and a steward ate the liver of a toad-fish (*Tetrodon Honkengo*, Bloch). The boatswain died in twenty minutes, the steward in seventeen. The weight of the liver is estimated to have been not more than 4 drachms. At 2 P. M. a Japanese ate five pieces of an unknown species of *tetrodon*. At 6 P. M. he complained of distress in the epigastrium and became generally and completely paralyzed, with cyanosis, diminished respiration, dilated pupil, loss of corneal reflexes, subnormal temperature. At 7 P. M. death occurred.

These eastern fish, however, are not alone in the possession of poisonous properties. Certain common fish of Europe have long been known to be poisonous.³

Usually not the entire fish but some particular part possesses these toxic properties, just as is the case with many of the *tetrodons*. These parts, as is true of the *tetrodons* also, are especially the roe and the ovaries, sometimes the liver and bile. These parts may be always toxic or they may be so only at a particular time of the year, especially during the spawning season. Then even the meat itself seems sometimes to acquire toxic properties, notably in the sturgeon.

Among the European fish, some part of which is poisonous, are the pike (roe and ovaries, during the spawning season); the barbel (roe, especially in May), a large fresh-water fish; the sturgeon (mussel during the spawning season); the cackerel, a small Mediterranean fish; the tench (ovaries); the carp (ovaries); the bream (ovaries); the poisonous perch (*perca venosa*); rarely the cod; the river lamprey, the eel (blood); the sheath-fish (*silurus glanis*, head); the goby (entire fish).

The symptoms caused by these fish are in human beings as follows: the pike: gastro-enteric disturbances; the barbel: vomiting, severe abdominal pain, diarrhoea, dryness in mouth and throat, intense thirst, urticaria and sometimes scarlatiniform cutaneous manifestations, dilatation of the pupils, painful spasm in the calves, and severe collapse. Prognosis favorable. Similar symptoms are caused by the cackerel, the cod, and the poison perch. Prognosis grave.

In the sturgeon group (*Acipenser*) we find: gastro-enteritis, dyspnoea, dysphagia, aphonia, collapse and death. Prognosis grave.

The carp, tench and bream: diarrhoea. The river lamprey: severe bloody diarrhoea. This fish is said to be harmless if it is strewn with salt while alive, and the resulting slime removed. The fresh blood of the eel is very poisonous. Several deaths have been reported,

preceded by diarrhoea, dyspnoea, pulmonary oedema, and collapse. Mosso⁴ found in the blood of the anguillo, the conger, and the murena, a toxalbumen "Ichthyotoxicum." All parts of the goby are poisonous, producing in from an hour to an hour and a half, progressive general weakness, ending in collapse and death.

In all of these instances the fresh fish, whether raw or cooked, is referred to.

Certain other fish are toxic only when they have fed on some special kind of food. This seems to be the case with the *meletta venenosa* and with the *clupea thrissa* and *venenosa* (poison herring).

Certain fish of the West Indies have been noticed to be toxic only when caught off certain reefs, but not elsewhere.

Occasionally poison employed to catch fish has been the source of human poisoning. For this purpose picrotoxin, also the euphorbia group of plants and the roots of the cyclamen *Europaeum*, also many of the digitalis-like group of poisons, are used. This custom does not prevail in this country, as far as I am able to ascertain.

Most of the instances of serious poisoning by shell-fish, as we shall see later, are due to extraneous toxins, usually produced by bacteria, in all probability. This leaves for consideration here only those quite frequent but rarely serious disturbances experienced by some people whenever they eat lobster, crabs, mussels and sometimes oysters. Urticaria, itching, erythema of various forms, acute cutaneous oedema and mild gastro-intestinal disturbances usually comprise the clinical symptoms. The acute oedema seen in many of these cases sometimes reaches an extreme degree. It may be circumscribed or general. Giant urticaria sometimes occurs. Both of these conditions indicate profound disturbance in the vaso-motor system and, with the restlessness and insomnia, due usually to intense pruritus, form the nervous manifestations of the affection. These instances are typical of toxic phenomena due to individual idiosyncrasy, such as is not infrequently seen in the case of certain drugs.

Among the intrinsic food-poisons most interesting to us are those contained in fungi. Instances of such poisoning are becoming more and more frequent with the increase of our immigrant population, especially that from southern and southeastern Europe, with whom fungi form an important article of diet. The proverbial carelessness of these people, the extent to which they forage the woods and fields for additions to their provender, and the considerable variation in color of our American fungi, compared with similar European genera and species, are all responsible for this increasing frequency of poisoning.

The most common and serious danger emanates from the genus *Amanita*, which appears in many varieties throughout the country and in great profusion. Among these *amanitae* are but two containing distinctly different poisons.

The *amanita muscaria* alone contains the well-known poison muscarine, the other species contains phallin.

The *amanita muscaria* is the most common of the poisonous *amanitae* in the woods about this city.

The symptoms of poisoning from this fungus appear from eight to twelve hours after eating and consist, in the beginning, of vertigo, faintness, abdominal pain, intense thirst, painful spasm in the extremities, tachycardia and falling blood-pressure, salivation, sweating, pallor, slowing of the respiration, contracted pupils, dimness of vision, occasionally diplopia, mental excitement or exhilaration, delirium and coma. Vomiting and purging may occur early but are usually late symptoms. Later in severe cases increasing frequency and feebleness of pulse, shallow stertorous respiration, stupor, coma, and rarely convulsive phenomena, preceding death.

Individual cases do not necessarily present all of these phenomena. As is seen the gastrointestinal symptoms are of minor prominence, while the nervous phenomena are conspicuous.

There is good reason for the assumption that this fungus contains some other poison. It is certainly poisonous for flies when it is in the fresh state. Muscarine is however not toxic for flies. Moreover many of the above symptoms are not characteristic of muscarine poisoning *per se*.

Atropine is the physiological antidote of muscarine, and if given early either to animals or humans exercise a very definite influence on many of the symptoms, especially those that appear early. Nevertheless such cases often die later on, regardless of the administration of atropine, and this late lethal effect is seen when a comparatively small quantity of the fungus has been eaten. This apparent early passing of the symptoms of poisoning, followed some hours later by death, has been noted where no atropine has been administered, both in humans and in animals.

The nervous symptoms produced by this fungus, as is seen, are a powerful inhibitory action on the cardiac ganglia, a marked influence on the vaso-motor system, as evidenced by profound reduction of blood-pressure, increased perspiration and salivation, contraction of the pupils, dimness of vision, diplopia, slowing of the respiration, rarely mental excitement, eventually stupor and coma, very rarely tetanic or clonic convulsive phenomena.

In Russia this fungus is dried and used as an intoxicant. Certainly in this country minute quantities do not have any exhilarating effect. Quite the contrary, in fact. McIlvaine,⁵ who experimented on himself with pieces the size of a hazel-nut: found that it produced vertigo, nausea, pallor, exaggeration of vision and respiratory oppression, the effects passing off in two hours, leaving a dull, torturing headache.

The poisonous principles of the other *amanitae*,

the most common of which about Boston are *phalloides*, *citrina*, *verna*, and *virosa*, produce severe gastro-intestinal irritation, nausea, vomiting, diarrhoea, faintness, pallor, sweating, subnormal temperature, anuria, and, on the part of the nervous system, sopor, stupor, coma, and sometimes muscular twitchings, more rarely convulsions.

The symptoms appear from ten to twelve hours after eating, and death occurs in two or three days.

With the species *verna* there appears to be more of a tendency to convulsive phenomena, and this is especially evident in animal experiments. Frogs, for instance, do not have convulsions when a solution of the *phalloides* is injected, but invariably do when solutions of the *verna* are employed.

With these species, as with *muscaria*, late symptoms seem sometimes the cause of death, viz.: iterus, hepatic enlargement, hematuria, nephritis.

Besides the *amanitae* there are a few other genera of which some species are poisonous. Of these, only one has ever had lethal effect as far as known. Curiously enough this is one that for years has been considered, all over the world, as edible, the *gyromitra* (*helvella*) *esculenta*. Were it not that the authenticity in one or two instances seems credible, there would be good reason to doubt assertions of its toxic properties. I give the symptoms as stated by Von Jaksch.⁶ He is certainly in error when he states that all of this genus (*helvella*) are poisonous.

Symptoms ensue five to six hours after eating: vomiting; diarrhoea, often bloody; colic, collapse, iterus, vertigo, trismus, tetanus, delirium, coma, and death in one or two days. Occasionally nephritis occurs. None of the other fungi are lethal in their effects and none of those that are deleterious produce nervous symptoms.

Potato Poisoning. As is well known, the potato (*solanum tuberosum*) belongs to the nightshade family. The members of this group contain an alkaloidal glucoside, solanin, especially to be found in the common nightshade (*solanum nigrum*).

While potatoes also contain this toxin, the content is usually too low to have any perceptible effect on human beings. The average content varies considerably with the season. It is largest in May, June and July, when Meyer⁷ says it may reach in unpeeled potatoes 0.100 to 0.116 grams per kilo. The largest is always found in and near the skin, the least near the centre. Clarus⁸ states that the amount necessary to produce toxic symptoms is 0.2 to 0.4 grams per kilo. It is evident therefore that, even assuming that the potatoes were eaten unpeeled and during the season of their highest solanin content, there would not be sufficient, under ordinary circumstances, to cause toxic symptoms.

Diseased or sprouting potatoes contain a much higher solanin content, and Wintgen⁹ found in such potatoes a content considerably exceeding the limits of safety.

Meyer found in the dwarf potatoes developed from the sprouts of old potatoes and in old shrunk potatoes, a content as high as 1.34 grams per kilo. Pfuhl¹⁰ found in potatoes causing a severe epidemic among soldiers, a solanin content of 0.38 grams per kilo in the peeled raw potatoes, 0.24 in the peeled boiled potatoes, a content that as will be seen, is above the safety limit. Wintgen was unable to confirm Weil's belief that bacteria influence the solanin content. As solanin is a normal constituent of the botanical genus to which the potato belongs, there seems no good reason to attribute its presence or its increase to bacterial action.

This form of poisoning is characterized by acute gastro-intestinal disturbance, chill, fever, nausea, vomiting, colic, diarrhea (4 to 6 times daily) headache, irritation of the throat, general weakness, apathy and somnolence, rarely coma, and very rarely convulsions. Herpes may occur. Symptoms last about three days. Temperature in Pfuhl's cases 38-39.5 C. Prognosis favorable.

Occupying an intermediate position between the strictly intrinsic and the purely extraneous food poisons are the occasional instances of honey poisoning. The cases are due to the fact that the nectar has been obtained from poisonous plants. Naturally the symptoms are those of poisoning by the particular plant concerned. They need not be considered here.

Mussel Poisoning. Somewhat difficult to classify, since it is not certain as yet whether the poison is intrinsic or is secondary to bacterial contamination, are the instances of poisoning by the common mussel (*mytilus edulis*). Schmidtman found that sound non-poisonous mussels, placed in a canal whence poisonous mussels had been obtained, acquired toxic properties, and that, on the other hand, when poisonous mussels were kept in the clean water of the bay they lost their toxic character. This would suggest, as he says, a bacterial origin of the poison.

Mussels are known to contain bacteria of which cultures are virulent for animals, but it is not known whether they are responsible for the poisoning in human beings.

Brieger¹¹ isolated a substance to which he gave the name mytilotoxin. Salkowski¹² found that the poison was not destroyed by heating to 110° C., but was destroyed by hot sodium carbonate solution.

The symptoms are well illustrated by an epidemic that occurred at Wilhelmshafen.

Some stevedores collected a quantity of mussels from the bottom of vessels. They were boiled, and eaten by them and their families. Several hours after the meal the symptoms appeared and there were nineteen serious cases, with four deaths.

The nervous symptoms in these cases were a choking sensation in the throat, difficult speech, vertigo and burning and tingling in the hands and feet. In addition there occurred vomiting, diarrhoea and extreme weakness.

Death occurred in the fatal cases in from two to five hours.

The post-mortem changes were those of intense gastro-intestinal congestion, enlarged spleen, fatty degeneration of the kidneys and liver, with hemorrhagic foci in the latter.

Unfortunately, like so many of these cases of food poisoning, the nervous system seems not to have been examined.

Poisoning by oysters, if we except the not infrequent typhoid infection transmitted by these shell-fish, is not common. When it occurs it is usually because there are among the oysters eaten one or more that are decomposed. The oyster itself never contains any intrinsic poison. Like other fish it may itself be ill from bacteria taken up from polluted water, and, since it is so often eaten raw, it may cause infection of the human being. These cases are characterized by gastro-intestinal disturbances. It is also possible that bacterial growth in the living oyster may store up sufficient toxin, of a form not destroyed by heat, to cause severely toxic symptoms after being cooked.

The majority of instances of poisoning, however, are due to saprophytic organisms.

One of the most frequently quoted cases of oyster-poisoning is that reported by Brosch,¹³ and this case especially concerns us here on account of the marked involvement of the nervous system. I venture to think that we can account for this case of poisoning, in the light of our present knowledge, from the symptoms alone.

An officer, one of a large party at a restaurant, happened to be the only one to eat oysters. In the light of subsequent events it was recalled that he remarked that one of them tasted bad. Within an hour or two he vomited severely and soon complained of headache and pain in the side, dimness of vision, difficulty in swallowing and speech, salivation, inability to expectorate, and retention of urine. When first seen ten hours after ingestion of the oysters, he had right facial paralysis, dilated pupils, ptosis, strabismus, ataxic gait, and cyanosis. He died from respiratory paralysis, less than twelve hours after the meal. The heart continued to beat two minutes longer. Sensorium was clear to the end.

We see in this clinical picture one closely similar to that caused by a now well-known saprophytic organism, the characteristics of which we shall learn later.

Extraneous Food Poisons. The acquirement of toxic properties by food ordinarily harmless, is almost invariably due to bacteria. It is quite evident therefore that the particular variety of food concerned in the poisoning is an immaterial factor, except in so far as it may determine

the presence of a particular variety of organism. Even this, as we shall see, is dependent less on the variety of food than on the manner in which it has been prepared or preserved.

For this reason, therefore, I shall lay more stress on the character of the organism concerned than upon the class of food involved.

Bacillus enteritidis: First isolated by Gaertner¹⁴ in 1884 during the Frankenhausem epidemic, it has been responsible for innumerable epidemics of food poisoning. It is motile, Gram negative, ferments dextrose with gas formation, but not lactose, and does not form indol in peptone solution. The two important characteristics of this organism from a clinical standpoint are that it is a common source of disease in animals used for food and that it produces a toxin that is not usually destroyed by heat. Another danger lies in the impossibility of distinguishing the meat from such animals from meat of healthy animals, since neither in appearance, taste nor odor is the meat altered.

The symptoms of this form of poisoning, both in animals and human beings, are predominantly those of severe gastro-enteritis, and post-mortem examination confirms this. The incubation period is from one to six days.

Exactly similar symptoms are produced in animals when sterilized cultures are administered either by mouth or subcutaneously; and, in addition to the gastro-intestinal disturbances, these animals present spasmodic twitching and paralysis of the lower extremities, showing that the toxin does possess the power of affecting the nervous system, and that this is not necessarily due to mixed infection. In human beings nervous symptoms are of only occasional occurrence and then of subordinate importance. They consist of headache, mental depression, pains in the limbs, disturbance of vision, dilatation of the pupils, difficulty in swallowing, and delirium. The visual disturbance, pupillary dilatation, and dysphagia are so infrequent as to suggest the possibility of mixed infection in those instances where such phenomena are seen.

It may be said that as a rule this organism and its toxin does not affect the nervous system.

Infection of food by this organism is practically exclusively confined to meat, whether freshly eaten or corned or smoked, or prepared as sausage, patés, or canned. It may, however, be transmitted by contact with the stools of an infected person.

Bacillus paratyphosus B. Also a frequent cause of disease in animals used for food, but apparently of much wider range than the preceding organism, this bacillus is much more likely to be disseminated by human carriers. Its toxin is not easily destroyed by heat.

Like the *Bacillus enteritidis* the symptoms produced by this organism are predominantly gastro-intestinal. Cutaneous manifestations are frequent however. Thus various erythematous,

urticaria, petechial hemorrhages or herpes may occur, and desquamation on the palms and soles has been observed. Albuminuria is often present.

Pupillary dilatation, photophobia, and delirium are occasionally seen, but otherwise the nervous system is not involved by this toxin.

The greatest variety of food products may be infected: meat, sausage, fish, ice cream, milk, cheese, puddings, etc. Both of the organisms just described have been found in milk.

Bacillus proteus: This organism occurs in food of any kind. It has even been found in oatmeal as the cause of poisoning. Its presence means contamination of the food from without. It is not associated therefore with the eating of food products from diseased animals. It will serve as the type of poisoning from allied putrefactive organisms.

In from 3 to 24 hours after the ingestion of such food gastro-intestinal symptoms of varying severity ensue, often associated with marked prostration and depression, pains in the neck and back, and less frequently convulsive phenomena. Prognosis good. Convalescence however may be prolonged on account of general weakness. The nervous phenomena are neither invariable nor especially peculiar to this type of food poisoning.

The toxin of the proteus group is destroyed by heat.

Colon bacillus: This organism is rather rarely responsible for food poisoning, although it is possible that it produces minor gastro-intestinal disturbances more often than we think.

The symptoms are purely gastro-intestinal. It produces no appreciable effect on the nervous system.

Its toxin is resistant to heat. The food in which it has been found the cause of poisoning is exclusively meat, especially when chopped, also liver, whether plain or in sausages, or patés.¹⁵

The hay bacillus (*subtilis*) is, rarely, responsible for similar symptoms, and one extensive epidemic is on record.

The putrefactive organisms are particularly likely to be found in chopped or minced meat, especially when its water-content is high, as is often the case when prepared by unscrupulous dealers. The poisoning is chiefly observed in summer, for obvious reasons.

Prognosis, as a rule, favorable. Nevertheless the eating of uncooked or smoked food infected with the proteus organism has caused death in not a few instances. It should again be emphasized that cooking destroys both the proteus and its toxin, being thus in sharp contrast to both the *Bacillus enteritidis* and *paratyphosus*. Fortunately the putrefactive organisms usually, although not always, make their presence known by signs of decomposition in the food, but odor and flavor may be masked by the process of smoking and therefore pass unnoticed.

In the series of extraneous food poisons thus far considered we find some without effect on the nervous system, others with occasional but by no means invariable or especially characteristic nervous phenomena. Of the latter class there appear to be certain instances, of relatively rare occurrence, in which, either on account of unusual amounts of the toxin or through individual susceptibility on the part of the particular nervous system concerned, there has occurred nervous involvement of a more specialized character than customarily met with.

Thus in a few instances of food poisoning due to the bacillus enteritidis visual disturbance, pupillary dilatation and difficulty in swallowing have been noted, and pupillary dilatation and photophobia have occurred in paratyphoid poisoning. While these unusual symptoms in human victims may possibly be explained by a mixed infection, we nevertheless know from animal experiments that the pure toxin of the bacillus enteritidis, at least, is capable of causing palsies of the lower extremities. This has not occurred in the human being as far as I can learn.

We come now however to a class of extraneous food poisons that present such an invariable propensity to affect the nervous system that no question of individual susceptibility can be entertained, and we must assume for the toxin a specific affinity for nervous tissue.

Throughout the last century epidemics of food poisoning were observed and reported in which the predominant symptoms were indicative of a very pronounced involvement of the nervous system, while, in striking contrast to all other forms of food poisoning gastro-intestinal symptoms were entirely lacking, or, if present, were so subordinate as to be an almost negligible factor. Thus, after a period of from twenty-four to forty-eight hours following the ingestion of the food, the symptoms began with disturbance of vision and of accommodation; diplopia; ptosis; inhibition of salivation, and consequent dryness in mouth and throat; soon thereafter difficulty in speech, in swallowing, in breathing, and disturbance of cardiac action appeared, and usually, although not always, retention of urine and constipation.

There was no fever, no impairment of the sensorium, and no sensory symptoms. What is particularly striking is the absence of gastro-intestinal phenomena. Moreover the mortality was many times greater than in any other form of food poisoning, and death was clearly due to bulbar paralysis.

This picture of acute, rapidly progressive bulbar paralysis was sufficiently constant to indicate that in all of these cases the same toxin was at work, and that this toxin was a specific poison for nervous structure.

At first these epidemics appeared to occur only after the eating of sausages and hence were for a long time termed "sausage poison-

ing." In 1895 however an epidemic occurred at Ellezelles, Belgium, from the eating of pickled ham. The puzzling fact was noted that while two hams were pickled in the same keg, only the individuals who ate of the lower of the hams were poisoned. Moreover the rest of the hog, which had been in healthy condition, was eaten freely and safely by many people.

Investigation showed that the hams had been placed, one on top of the other, in brine, the bottom and poisonous one deeply immersed, the top and harmless one incompletely covered with the brine. Van Ermengem,¹⁶ who investigated this epidemic, found in the lower ham a strictly anaerobic bacillus to which he gave the name of *Botulinus*.

This organism has since then been found in all cases presenting the characteristic symptom-complex above described, regardless of the particular variety of food concerned in the poisoning. The one essential requirement is that the food shall have been kept for a time excluded from oxygen, or nearly so.

Since Van Ermengem's discovery this type of food poisoning has been reported many times, and wherever searched for this particular anaerobic bacillus has been found to be the cause.

It is particularly likely to be found in poisoning from the eating of canned goods, whether meat, fish, or vegetables; in sausages, especially very thick varieties, tightly compressed in large thick gut; and in meat patés, thickly coated with fat; a large water-content particularly favoring its growth.

This organism is a saprophyte, not multiplying in living tissue, although it may gain access even to the internal organs. It is a large (4-9 μ long, 0.9-1.2 μ thick) slightly motile bacillus with rounded ends, and is Gram positive. It grows well in bouillon and in glucose agar, producing gas, its maximum growth occurring between 20° and 30° C. It forms oval spores, located near the end of the organism. The spores are of low resistance, being rendered inert by exposure to 80° C. for an hour.

Its morbid effects are produced solely by the toxin that it has already formed in the food before ingestion. Filtered cultures administered to animals produce the characteristic phenomena seen in the human victim and death is caused by respiratory paralysis. This toxin is of extreme virulence. As little as 0.0001 c. c. of a filtered culture produces symptoms of paralysis in monkeys, cats, rabbits, guinea-pigs and mice. In animals convulsive phenomena are sometimes seen. In pigeons ptosis, dilated unequal pupils, and paralysis of the wings were observed.

In the dead animals degeneration of the bulbar nuclei and anterior horn cells was found.¹⁷

In 1900 Roemer¹⁸ reported another instance of ham poisoning caused by this organism. The ham, from a sound hog, had been put in brine,

from which after five weeks, bubbles of gas were seen to rise.

It has been definitely proven that this organism cannot develop in the presence of more than 6% of salt. Therefore in both of the instances here cited, the ordinary 10% brine could not have been used.

In 1904 in Darmstadt¹⁹ twenty-one members of a cooking school became ill twenty-four to forty-eight hours after eating bean salad, and eleven of them died.

The symptoms were disturbances of vision, ptosis, various motor palsies, disturbance of respiration and cardiac action, and an entire absence of gastro-intestinal disturbance, fever, mental or sensory phenomena. Death was due to bulbar paralysis.

The string-beans, used in the salad, had been canned by one of the cooks at the school. On opening the can a rancid odor was noticed but as the beans seemed otherwise in good condition nothing was thought of it at the time. As they appeared very tender they were not cooked, but merely rinsed. Later on it was recalled, in the light of subsequent events, that the rancid odor was even more perceptible after the salad had stood for a while. A portion of the salad was allowed to cook for a while, by mistake. They who ate of this portion did not suffer, with the exception of one individual who ate of it while it was only slightly warm. She died.

The remains of the uncooked salad extracted with normal salt solution and passed through a Berkefeld filter was found highly toxic, 0.5 c.c. of this sterile filtrate, subcutaneously, killing mice in twenty-four hours with symptoms of general paralysis.

Bacteriological examination of the salad revealed an anaerobic bacillus identical with the bacillus botulinus. Its cultures, when incubated at 24° C., produced a toxin so powerful that it killed mice in doses as small as 0.000003 c. e., and guinea pigs in a dose of 0.0003 c. e. It is presumed that sterilization of the can, as practised at the cooking-school, was imperfect, for cooking destroys both the organism and its toxin. So characteristic are the symptoms caused by this toxin that it is easy to recognize its influence in instances where no bacteriological examination of the food has been made.

This is well illustrated by the cases reported by Sheppard in 1907. Three men on a camping trip ate some canned pork and beans. All became ill, eighteen hours later, with the characteristic symptoms of botulism, and all died from bulbar paralysis on the fourth day, without gastro-intestinal symptoms, without fever and with the sensorium clear to the end. The same mistiness of vision, diplopia, ptosis, difficulty in speech, swallowing and respiration were present in these cases as in all instances of botulism. The can of beans had been purchased four months previously and for a portion of this period had been kept in a warm place. The

cases reported by Preobrashensky as ptomaine poisoning were in my opinion unquestionably instances of botulism. The extensive and intense involvement of the nervous system renders it of interest to cite these cases.

On the morning following the ingestion of the food, a young man noticed difficulty in swallowing and speaking. His friends noticed that his facial expression seemed vacant. He went to work however, and but little more was thought of it until the 5th day when his voice became nasal and fluids came out through his nose. On the 6th day he became more or less helpless; vertigo, diplopia, weakness of the external ocular muscles, especially on convergence, ptosis, diminished vision for near but not for distant objects, mask-like facies, weakness in protruding tongue, in swallowing, chewing, speaking and breathing, diminution of the sense of taste, extreme weakness of the cervical muscles, inability to support his head, to raise himself to sitting posture, inability to raise his arms, weakness of lesser degree in his legs, loss of deep reflexes, and diminution of the superficial reflexes were present in the following days, and he finally became unable to speak, to swallow, to chew, to cough, or to expectorate. The bowels were constipated. Fundi, hearing and smell were normal. No mental or sensory involvement.

His mother was similarly affected, the symptoms beginning on the 4th or 5th day. Both eventually recovered.

Van Ermengem believed the toxin to be of the same class as that produced by the bacillus of diphtheria and tetanus, namely a toxalbumen. The work of Erieger and Kempner²⁰ seems to confirm this opinion, as well as the successful production of an antitoxin by the latter author.²¹

Van Ermengem found degeneration in the nuclei of the motor oculi, the vagus and the hypoglossal. Marinesco¹⁷ found marked and early degeneration in the spinal gray matter, especially of the anterior horns. These findings were confirmed by Kempner and Pollack,²² who have made careful studies of the anterior horn cells in animal experiments with the toxin.

They found all degrees of degeneration,—sometimes cells in close proximity showed great contrasts, some in a state of advanced degeneration, others unaffected. Their examinations were unfortunately confined to the anterior horn cells. They found changes as early as twenty hours after the administration of the poison.

Kempner succeeded in immunizing a goat, whose serum protected animals inoculated with the toxin and showed curative power in animals previously inoculated. It was itself without injurious effect on the cells. An important fact, if true, is that he claims regeneration of partly degenerated cells as a result of this antitoxin.

There are occasional instances in which one or more of the symptoms, so characteristic of

botulism, crop out in a symptom-complex of which the dominant features are gastro-intestinal. Whether these, as seems probable, are always to be regarded as mixed infections or not, is still unsettled.

In this class, in my opinion, belong, among others, the cases reported by David²³ of herring poisoning and those by Fürst²⁴ of sardine poisoning.

It is not the province of this paper to deal with the accidental contamination of food by metallic poisons, so that I shall not consider instances such as the famous beer-poisoning epidemic of Manchester, Eng., or the now quite unknown instances of lead-poisoning from canned goods. More danger exists now perhaps from tin than from lead. It is important however to call attention to Lehmann's²⁵ warning of danger in the use of cheap glazed earthenware, especially when employed for the boiling of food containing vinegar or fruit acids. From 100 to 700 mg. of lead have been extracted from such ware at a single boiling.

Halenke²⁶ observed two instances of poisoning in women who had cooked cranberries in such a pot. From the stewed fruit they made a tart. Soon after eating part of the tart they became ill, one severely so. The glaze had been completely dissolved from the inside of the pot. A piece of the tart contained 160 mg. of lead. It was estimated that each woman had consumed from 400 to 600 mg. of lead malate, and that approximately 1000 mg. had been given off in this single boiling.

As this is a source of lead not likely to be thought of, it seems well to mention it here.

With these exceptions it may be stated that metallic poisoning from household utensils is extremely uncommon, and that danger from copper particularly does not exist. There is no doubt that many instances ascribed in the past to metallic poisoning were really due to bacteria and their toxins.

I now desire to record the following instances of food poisoning in which an unknown toxin manifested a conspicuously selective action on the nervous system.

A young woman, 26 years old, was brought to my office October 3d, 1914, by her family physician. The following history was obtained. She resided in a small town in Massachusetts, with her father, mother and sister.

On the 22d of the preceding July she and the other members of her family ate baked swordfish. This fish was purchased in apparently perfectly fresh condition, was placed in a refrigerator for about four hours, then baked and eaten at once. A few hours later she began to vomit and vomited for several days. During this time her tongue was heavily coated.

July 30th she felt much better. There was no diarrhoea at any time.

August 1st she drank some lamb-broth made the previous day from lamb purchased that day, the broth having been kept in the refrigerator twenty-four hours. She vomited soon afterwards.

August 12th, she began to experience weakness and numbness in the hands and feet, especially in the latter.

August 17th, she ate hamburg steak which caused no trouble. The balance was put in the refrigerator and eaten the next day.

Soon after, she began to vomit, and vomited for seven days. The weakness in upper and lower extremities steadily increased, as did the numbness in the legs below the knees.

August 29th she drank a half cup of freshly-made chicken broth, made from a chicken killed two days previously and kept in the refrigerator until the broth was made. She vomited at once, and this continued for an entire week. The refrigerator was then abandoned and no further gastric trouble occurred. The weakness progressed to paralysis in the legs and arms, especially in the extensors of the feet and hands.

On October 3d my examination showed complete extensor paralysis of hands and feet, with marked weakness of all of the other muscles, especially below the knees and elbows. The deep reflexes were all abolished. There was in the lower extremities pronounced diminution of all forms of sensation, increasing towards the distal portion of the limbs. The muscles below the knees and elbows were flabby and showed considerable atrophy. Beyond slight coldness in feet and hands vaso-motor symptoms were not present.

Cranial nerves and body muscles were not apparently involved.

The history of the rest of the family was then given by their physician.

The father of the girl, a farmer, Mr. A., age 66, ate considerable of the fish, apparently more than the others, and at the same time, at noon, July 22d. In the afternoon he felt nausea which continued several weeks. He did not vomit. There was no disturbance of the bowels.

August 12th he noticed prickling sensations in his feet and that he stumbled frequently in walking and had difficulty in regaining his balance, and when he tried to milk the cows he had not his customary strength in his hands.

During the next twelve days the weakness steadily increased until on August 24th he was unable to get out of bed, and two days later on, August 26th, he was completely helpless, unable to turn in the bed or to raise or turn his head on the pillow. Shortly before this he had noticed much difficulty in swallowing and when he took fluids they came out through his nose. On the 26th of August, before he realized his helplessness, he made an attempt to sit up and his heart action became so weak that he nearly lost consciousness. There was complete anorexia but no gastro-intestinal disturbance at any time, except persistent nausea. In contrast to his wife, he at no time has had any marked pain.

His wife, Mrs. A., a woman of 50, after eating some of the fish, was nauseated, and had a heavily coated tongue for several days and complete anorexia.

On the following day she felt weak and towards evening a slight diarrhoea ensued.

August 9th she felt prickling sensations in the hands and feet with weakness, and at the same time some difficulty in swallowing. Soon she experienced a great deal of pain in the legs.

Sept. 1st she became unable to walk or stand.

She had an attack of herpes zoster during this period.

She was not made ill by the lamb broth taken on Aug. 1st, but was made slightly ill by the second eating of the hamburg steak, after it had been in the refrigerator 24 hours; and also by the chicken broth eaten on Aug. 29th (see daughter's history).

Another daughter, a girl of 24, ate a little of the fish and vomited for several days.

Aug. 12th numbness and tingling of the feet began and lasted a week, during which she had an attack of herpes zoster.

Mrs. A's sister-in-law, about 50 years old, was at supper on the evening of the day the fish was eaten. Some of the fish, which had been in the refrigerator since noon was eaten by her and Mrs. A. The sister-in-law was ill with nausea, anorexia and diarrhoea for two weeks. B, a visitor for a day, ate on July 31st some of the lamb broth as soon as it was cooked, and suffered no inconvenience. This was the broth that on the following day, after having been in the refrigerator twenty-four hours, made Miss A. ill.

Aug. 18th. again a visitor at the house, he ate some of the hamburg steak after it had been twenty-four hours in the refrigerator. He vomited for five days. He was not present when the fish was eaten.

A friend who cleaned the refrigerator, after its use was abandoned, about Sept. 1st, was slightly ill with vomiting and slight numbness in the extremities.

In November, 1914, I visited this family. I found my patient, Miss A., greatly improved, but still with considerable weakness in the extensors of the feet and hands and still some sensory diminution. Last week the family physician wrote me that the weakness lasted five or six months, and that even now the feet and ankles are not quite as strong as before her illness, although he considers her as practically recovered.

I found Mr. A. in pitiable condition, almost helpless in bed, with complete extensor paralysis in the lower extremities, and marked weakness in all of the other muscle-groups. The upper extremities showed marked general weakness but especially in the extensors of the wrists and fingers where nearly, although not quite absolute paralysis was present. The grasps also were practically powerless. He was able to lift his head and turn somewhat in bed, although greatly handicapped by the inability to depend upon the aid of his limbs. The deep reflexes were all absent. There was the same diminution of sensation to all forms, in upper and lower extremities, increasing towards the distal portion of the extremities, with extreme blunting of sensation in hands and feet. There was marked atrophy in the legs below the knees, and moderate wasting in the hands. The posterior calf muscles showed considerable contracture, and there was moderate flexor contracture in the fingers and thumbs. His physician writes me that he showed very slow but constant improvement from this time on, and after a time was able to get about on crutches. These he was not able to discard until October, 1915, fourteen months after the onset of his illness.

At present when walking outdoors he occasionally uses one crutch. He can go up and down stairs by holding onto the banister; stands well, with no marked contractures, although thumbs are slightly adducted and the fingers somewhat flexed, and he can walk three or four hundred feet carrying a

pail of water in each hand. There is still some loss of sensation in the finger-tips and feet. Knee jerks are still absent, and considerable atrophy exists in the quadriceps group. The muscle-groups below the knees have nearly returned to normal. I found Mrs. A. with great weakness in the legs and arms, especially in the extensor groups. The tendon reflexes were absent. A moderate degree of atrophy seemed present in the legs. Although she alone of all the family had suffered greatly from subjective pains in the legs, I was unable to find any diminution of sensation, and only slight tenderness over the nerve trunks in the legs.

The family physician writes that the condition lasted about five months in the upper extremities, and that there is now no perceptible weakness there; the lower extremities made a much slower recovery and she suffered much pain for months, but that at present there is no special weakness except in going up and down stairs, when there is some sense of weakness in the knees. The knee jerks are still absent. She has had no pain for many months.

At the time of my visit I found the second daughter practically without symptoms. She was the least ill of all the family.

These cases present several factors of interest. In the first place there can be no doubt that the fish was responsible for the illness of these people. When did it become poisonous and what was the nature of the poison? Swordfish is not known to contain any intrinsic poison at any time of the year. Did it possess its deleterious properties when purchased or did it acquire them between that time and the few hours before it was cooked and eaten. It was apparently in good condition when obtained. It was purchased in a small town, where presumably the rest of it was sold and where, so far as known, no other instances of similar illness occurred. It was kept in a refrigerator four hours, then baked and immediately eaten. From this refrigerator other food, placed therein after the fish-poisoning occurred, caused illness in several people, whereas the same food eaten before it had been in the refrigerator caused no illness whatever. Moreover the individual who cleaned the refrigerator, who was not a member of the family, and who did not partake of any of the food that made the others ill, was also slightly ill afterwards. This would seem to indicate that the icebox was infected and would indicate, as I think may be henceforward assumed, that a bacterial toxin was responsible for the illness. As it had been in constant use and no food taken therefrom had caused illness, until after the fish had been kept therein, it would seem that the fish must have been in some direct way responsible for the contamination of the refrigerator.

If so, it must have been to some extent infected when placed in the refrigerator. If so, why did it not make others ill, for it was but part of a large fish that must have been sold to other families in the same town.

There are perhaps three possible explanations of this:

First, the manner in which the fish was cooked.

Second, the conditions under which it was kept before being eaten.

Third, and closely connected with second hypothesis, the possibility that it was infected after it was purchased, and before it was put into the refrigerator.

First, as to the method of cooking: It is perhaps not generally known that baking or roasting is an extremely uncertain method of subjecting food to the action of heat, and that often the central portion of a mass of roasted meat has not been subjected to a sufficient degree of heat essentially to alter its character. It is quite within the bounds of possibility that even bacteria might survive in the central portion of baked or roasted meat, as it is often cooked, while many bacterial toxins are of a high degree of resistance to heat, and this is true of two, at least, of the organisms responsible for food poisoning,—paratyphoid and enteritidis. Baked fish is often insufficiently cooked. It may have been so in this case, and toxins, if not bacteria, may have survived the cooking.

Second, the manner in which the fish was kept after it was purchased, namely, in a refrigerator for four hours. It is not generally understood that bacterial growth, in suitable media, may be very active even at low degrees of temperature, as Pennington* has shown, while the high degree of moisture and deficient ventilation in the average refrigerator are highly favoring factors. Therefore there existed in this case the possibility that organisms, already present when the fish was purchased, may have developed subsequently sufficiently to produce a quantity of toxin adequate to cause the severe symptoms noted in this family, a toxin either highly resistant to heat, or in this instance insufficiently exposed to heat during the cooking of the fish.

As to the third hypothesis, that the fish may have been infected after it was purchased, it at least seems improbable that this could have been the case, for such infection would have been a surface contamination and therefore easily destroyed by the baking, even if the heat of the oven had not completely penetrated the piece of fish, while it does not seem probable that there had been time, during the four hours in the refrigerator, for bacteria from the surface, or their toxins, to have penetrated deeply into the meat.

It is a source of great regret that at the time the cases came under my observation it was too late to institute any investigation of the actual origin and character of the toxin responsible for these severe cases of polyneuritis.

I think that there is no doubt that a toxin was present in the fish in large amount at the

time it was eaten, for the gastric symptoms appeared within a few hours after it was consumed.

The appearance of the nervous phenomena occurred with striking uniformity twenty-one days after the onset of the gastric symptoms.

The phenomena presented by these cases do not correspond to any of the varieties of food poisoning described above under the classification of extraneous food poisons, that is, to any of the cases known to be due to organisms, whose identity has been revealed in late years by bacteriological research.

While I have cited but a few instances of epidemic food-poisoning, I have taken the symptomatology above given from a large number of epidemics and of individual cases reported, where the bacteriological identity of the exciting organism has been fully worked out. I have thus far found no instances among these that presented symptoms similar to those presented by this family, so that I am forced to conclude that such instances are not caused by any type of organism as yet demonstrated in food poisoning, although the organism itself may be of some known variety.

REFERENCES.

- ¹ Arch. experiment. Path. und Pharm., 1890, xxvi, 401, 453, 418.
- ² Mittheil. Univ. Tokio, i, No. 5, 375.
- ³ Virchow's Archiv, 1890, 122, S. 92.
- ⁴ Robert: Ueber Giftfische und Fischgifte. Stuttgart, 1906.
- ⁵ Arch. für exper. Path. und Pharm., 1888, Bd. xxv, S. 111.
- ⁶ Melville: One Thousand American Fungi. 1915, p. 15.
- ⁷ Die Vergiftungen, S. 596.
- ⁸ Arch. für exper. Path. und Pharm., 1895, Bd. xxxvi, S. 361.
- ⁹ Journ. für Pharmakodynamik, 1857, Bd. 1, Th. 2, S. 247.
- ¹⁰ Zeitschrift für Untersuchung der Nahrungs- und Genussmittel. 1906, Bd. xii, S. 113.
- ¹¹ Deutsch. med. Wochenschr. 1899, S. 753.
- ¹² Virchow's Archiv, 1888, Bd. cxii, S. 549. Also Untersuchungen über Pkomaine. Th. 2, 1886, S. 65.
- ¹³ Virchow's Archiv, 1885, Bd. cii, S. 578.
- ¹⁴ Wiener med. Wochenschr. 1896, Bd. ix, S. 219.
- ¹⁵ Korrespondenz-Blatt des aertzl. Vereins von Thüringen. 1888.
- ¹⁶ Fischer: Zeitschr. f. Hygien. 1902, Bd. xxxix, S. 447.
- ¹⁷ Van Ermengem: Zeitschrift für Hygien. 1897, Bd. xxvi, S. 1.
- ¹⁸ Also Centralblatt für Bakteriologie. 1896, Bd. xix, S. 442; Bd. xx, S. 23; 1897, Bd. xxi, S. 19.
- ¹⁹ Marinenco: Comptes rendus hebdom. Paris. 1896.
- ²⁰ Roemer: Centralblatt für Bakteriologie. 1900, Bd. xxvii, S. 857.
- ²¹ Fischer: Zeitschrift für klin. Medicin. 1906, Bd. lxx, S. 58.
- ²² Brieger and Kempner: Deutsch. med. Wochenschr. 1897, Bd. xxiii, S. 521.
- ²³ Kempner: Zeitschr. für Hygien. 1897, Bd. xxvi, S. 481.
- ²⁴ Kempner and Pollack: Deutsch. med. Wochenschr. 1897, Bd. xxiii, S. 508.
- ²⁵ David: Deutsch. med. Wochenschr. 1899, S. 127.
- ²⁶ Fürst: Deutsch. med. Wochenschr. 1899, Beilage No. 6, S. 32.
- ²⁷ Lehmann: Hygienische Rundschau. 1902, S. 785.
- ²⁸ Mentioned by Lehmann: S. 795.

SEMINAL VESICULITIS AND PROSTATITIS TREATED BY VESICULOTOMY AND PROSTATIC DRAINAGE.*

BY JOHN H. CUNNINGHAM, JR., M.D., BOSTON.

DRAINAGE of the seminal vesicles for non-tubercular inflammatory lesions in these structures has been advocated by Dr. Eugene Fuller, since 1901, when he first published his technique and the results in a small group of cases. Since that time he has made many reports of groups

* Yearbook U. S. Department of Agriculture, 1907; and Jour. Microbial Chemistry, 1908, Vol. iv, No. 1, p. 353.

* Read before the Chicago Medical Society, Dec. 20, 1916.

of patients treated by vesiculotomy and has endeavored to create interest in the procedure, with but little success. Many members of the profession have been impressed by the striking results in patients that Dr. Fuller has shown before medical gatherings, but the technical difficulties of his operation, perhaps more than anything else, have been the reason of its not being more generally adopted. During the past few years the value of surgical drainage of the seminal vesicles has become more generally appreciated, due in large measure to the conviction that many disturbances, especially in joints, are due to focal infection from which infectious emboli or toxins gain entrance into the circulation and produce metastatic disturbances in other quite remote structures of the body by some peculiar selective action of the particular infection. The inter-relationship of small abscesses at the roots of teeth, pyorrhea, sinus suppuration and tonsillar infections to rheumatic manifestations is now generally acknowledged; and an explanation of most forms of chronic arthritis is usually sought for in some of the structures of the body which are prone to chronic infections.

The enthusiasm resulting from this recent conception of focal infection resulting in metastatic disease is well founded, yet Fuller in 1904 recognized the relationship of focal infection in the seminal vesicles to gonorrhoeal arthritis and showed that surgical drainage of such foci resulted in a cure of the arthritis. The truth of Fuller's deductions in regard to this matter have been fully substantiated by the work of Squire, Schmidt, Young, E. O. Smith, White, Staley, and others. It becomes obvious that in searching for a focal infection which may explain a secondary arthritis, the seminal vesicles must enter into the differential diagnosis. While Fuller justly advocates seminal vesiculotomy in other than focal infections with metastatic manifestations it is with this group of patients that I have had the most experience, and it is because of the brilliant results obtained in this class that seminal vesiculotomy will most probably be more generally recognized as a valuable surgical procedure.

Fully to appreciate the nature of infection in the deep genital structures, the anatomy of the seminal vesicles and prostate and their relation to one another and to the deep urethra and rectum must be clear. With this in mind, it can be readily understood that a urethral infection which extends into the prostatic urethra, infecting the prostate through its minute opening into the prostatic urethra, or extending through the ejaculatory duct and entering the vesicles, may result in foci of infection which have, at best, small avenue of escape, and with inflammation in these small ducts the avenue may be entirely closed temporarily or permanently. While the structure of the prostate, made up of numerous small glandular tubules, differs somewhat from the seminal vesicles which are com-

posed of convoluted and twisted tubes with diverticulae; the same difficulty in producing drainage of the retained products of inflammation pertains in each, and infections of these structures are characterized by multiple focal infections of extreme chronicity with or without acute exacerbations of systemic manifestations and local disturbances.

Infections of the prostate and seminal vesicles are usually simultaneous, and, while occasionally producing true abscesses in these structures, they are more often chronic from their inception.

Chronic infections of these structures are the most common causes of a persistent urethral discharge characterized by a small amount of purulent moisture at the meatus, especially in the morning, which persists for an indefinite period of time following the subsidence of the anterior infection. Acute exacerbations of active discharge occur, with lowered vitality from whatever cause, even after long periods of abstinence from any subjective or objective symptoms, which is a common evidence of the persistence of the focal infection in these complicated structures, and it is a question if a vesicle once infected may undergo a complete resolution, while the same is true, to a lesser degree, of focal infections of the prostate.

From these poorly drained foci septic material, either in the form of infectious emboli or toxins, may at any time escape into the circulation and lodge in various parts of the body, producing systemic manifestations either in the form of local disturbances in synovial membranes, the myocardium or meninges, or may result in a group of symptoms dependent upon a toxemia which produces mental derangement in the form of neurasthenia in its broadest sense. The infection within these organs and extending from them into the surrounding tissues results in local disturbances in the form of perineal pain and rectal irritation, possibly due to nerve block and disturbance of the lymph and blood circulation from fibrous tissue.

The inflammatory reaction within the vesicles, with essentially no avenue of escape, becomes distended with the infectious product, and, with the secretion of the organ, results in a distention of these tubular structures. Nature, in its attempt to incapsulate the infected structures by the usual connective tissue repair process, produces a perivesiculitis or thickening of the fascial structures overlying the infected organs whereby in time they are firmly bound to the bladder and rectum, which, together with the nerve block and disturbances in the circulation, may account for the rectal irritation and perineal pain. What is true of the vesicles is, in a degree, true of the prostate, yet the connective tissue elements normally abundant in the prostatic structure tend to incapsulate the foci within the organ and the result is commonly demonstrated as hard nodules in the gland by rectal palpation.

All attempts to eradicate the severe forms of infection of the seminal vesicles, and in some instances from the prostate, may be futile because of the extensive nature of the infection and the small channels through which drainage may take place, so that there remains a group of patients in which the surgical principles of drainage for retained inflammatory products must be employed if a cure is to result.

There is a group of patients that has come under my care with acute suppurative of the seminal vesicles, some with and some without abscess formation in the prostate. There have been some with an abscess in the prostate, vesicles, and one epididymis, all true abscesses, from which frank pus has been evacuated. Many of these patients presented the condition usually treated by local applications, hot rectal douches, rectal suppositories or other forms of sedatives, which, with the subsidence of the acute symptoms, lapse into the common picture of chronic seminal vesiculitis and prostatitis. In this group should be included patients admitted to the hospital with the diagnosis of ischio-rectal abscess, in which there was no rectal disease, but a recent urethral infection; the true condition being a rupture of the vesicle or prostatic abscess into the ischio-rectal fossa. Some of these cases showed no surface changes on the buttock, but rectal palpation reveals not only a swollen painful prostate, but a tender indurated mass through the lateral wall of the rectum above the prostate. While these cases have revealed an abscess of the prostate which had ruptured into the ischio-rectal fossa, there has been true suppuration within the vesicles as well. One patient had an abscess of many ounces originating in the right seminal vesicle, which burrowed upward above the pelvic brim, nothing appearing on the buttock surface, and the prostate at operation not showing abscess formation. The group just mentioned, resembling ischio-rectal abscess in most respects, and being mistaken for such, even in the presence of the history of a urethral infection, and opened and drained in the usual manner of treating ischio-rectal abscesses, have as a sequence, in some instances, a fistulous tract leading to the diseased vesicle, as proven by dissecting them to this structure.

I believe we shall come to realize that many so-called ischio-rectal abscesses are in reality ischio-prostatic or ischio-vesical abscesses and that we should take advantage of early drainage of suppurative seminal vesiculitis as we do with prostatic suppuration.

The selection of cases for seminal vesiculectomy, should, I think, include those who have any of the local or general manifestations dependent upon acute and chronic focal infections in these organs, which cannot be overcome by the usual non-operating methods of treatment.

The pathological classification consists solely of acute to chronic, non-tubercular, grades of inflammation of the genital tract, beginning with

the prostatic urethra and including the structures therein, the prostate, vesicle, vas, or epididymis, with the predominating feature of the inflammation located in the seminal vesicles. It is the retention of the products of inflammation in the seminal vesicles, and in some degree in the prostate, that results in the clinical symptoms, both local and general.

The following clinical classification, which serves to select the cases suitable for operation, is based on the most important symptom or group of symptoms, but it is obvious that such a classification must be most arbitrary, as different groups of symptoms often exist together in some measure in many cases. The following classification is based on the most prominent subjective symptoms and the objective findings.

1. *Inflammatory Group:* (A) Acute suppuration, occurring most often in the vesicles and prostate in the course of acute urethritis, resulting in a febrile state and presenting locally, a swollen, tender prostate and distended, painful vesicles. The condition is generally treated by confinement to bed, local applications and drugs to relieve pain, with the result that after the acute process subsides there persists a urethral discharge from a sub-acute or chronic seminal vesiculitis and prostatitis, which lasts for weeks or months, even with appropriate local treatment.

(B) The chronic inflammation which has but a slight or no severe acute stage, characterized by an obstinate urethral discharge, proven not to originate from the anterior urethra and the material expressed from the vesicles and prostate by massage or coitus, showing fresh or old blood, and the products of inflammation in the gross and microscopical examinations. Cases of recurrent epididymitis associated with the condition just mentioned, and ejaculation of bloody semen point to chronic disease in the vesicles. While most of the cases of this group may be cured by appropriate non-operative treatment, there are others which cannot be sufficiently drained through the natural channels, and which must be subjected to operative drainage of the vesicles and prostate to effect a cure. There are cases of cystitis which can be explained in no other way than by the extension of the inflammation in the vesicles to the bladder wall and mucosa.

2. *Rheumatic Group:* Under this heading is included joint, tendon, muscle and bone lesions which may be dependent upon a focal infection. Gonorrhoeal seminal vesiculitis and prostatitis with metastatic lesions fall into the same class of focal infection as those arising from teeth abscesses, tonsillar infections or other poorly drained infective foci, from which other parts of the body become secondarily invaded by emboli or toxins entering the blood stream. In searching for the focus, which will explain a

so-called rheumatic manifestation, much differentiated study may be necessary in some cases; but in the differential diagnosis the condition of the prostate and seminal vesicles should be included.

3. *Pain group:* Under this heading is included those with persistent perineal pain, sometimes accentuated by defecation and often referred to the rectum; indefinite in character, but extremely disturbing to the individual, and often associated with neurasthenic symptoms, painful erections, without sexual stimulus, frequent nocturnal emissions, sometimes painful, and the semen bloody. This group usually gives a history of a previous urethritis, and in the absence of rectal or bladder disease, and the presence of palpable changes in the prostate and vesicles associated with abnormal elements in the fluid expressed from those organs; the cause of pain may be attributed to disease in these structures. Changes in the verumontanum may be associated with the changes in the prostate and vesicles, and occasionally treatment of this structure alone may relieve the distressing symptoms.

4. *Neurasthenic Group:* Under this heading is included those with but slight physical findings of disease in the vesicles already enumerated and mental symptoms in the nature of depression, melancholia and apprehension, associated especially with sexual features; the so-called sexual neurasthenia.

My operative experience includes 36 cases in the "inflammatory group," 67 in the "rheumatic group," and 8 in the "pain group." There has been no mortality. I have operated on no cases in the "neurasthenic group" but many of the patients falling under other headings had neurasthenic symptoms which improved or disappeared with the relief of their material symptoms.

The *pathological process* as observed at operation, excluding the suppurative invasion of the ischio-rectal fossa, has varied from early inflammatory stages, where the infection is almost entirely confined to the vesicles and prostate, to the late stages of the disease where there is marked chronic inflammatory infiltration of the tissue surrounding these structures, embedding these organs in a dense mass of scar tissue, obliterating the normal lines of cleavage between the rectum and the prostate and the base of the bladder, and so rendering the exposure of the vesicles most difficult and in two cases impossible. In the early stages of the disease, the prostate is found much swollen and boggy from congestion with blood and infiltration with lymph, and the vesicles distended, fluctuant organs, from the retained products of inflammation and secretion. When these structures have harbored infection over a long period of time, the tissues surrounding them, normally soft, are dense with induration and firmly adherent to the thickened walls of the vesicles and rectum, and the prostate capsule much thickened from

infiltration by scar tissue. The organization of this plastic exudate surrounding the vesicles and prostate may produce contracture of the ureter, which passes under the upper portion of the vesicle, and extension of the inflammatory process may invade the bladder wall, producing a basal cystitis or trigonitis.

In many instances the infiltration of the fascial covering of the vesicles was found so intimately bound to the vesicles that it could not be separated from it and the vesicles exposed; so that the vesicles had to be opened through the thickened fascia without freeing it from the vesicle. In the majority of instances of the chronic type, a total removal of the vesicle could not have been accomplished with any degree of safety, while in the early acute type it might have been successfully performed. Dependent upon the vesiculitis, permanent changes in the periosteum of the os calcis in the form of small spurs or larger areas of thickening have been observed.

For the purpose of histological and bacteriological study pieces of the posterior surface of vesicles and bits of prostatic tissue have been removed and dropped immediately into Zenker's fluid, and cultures taken from the opened vesicle by swabs.

The *histological study* has been done in the Pathological Department of the Boston City Hospital, and I am indebted to Dr. F. B. Mallory and Dr. H. W. Cook for their interest in this work. It is important to note that pieces of a single vesicle may show normal tissue and acute and chronic inflammation; and that prostatic inflammation, in both the acute and chronic stages, has been found associated with inflammation in the vesicle. It is evident from this study that the whole vesicle is not always involved, and that the inflammation is usually confined to areas. Organisms have been sought for in the inflamed areas of vesicle and prostatic tissue, but there are no positive findings. There were questionable cocci in some sections, but they were so few and not without unquestionable features that they can be considered only suggestive.

Gram-negative organisms, especially cocci, are most difficult to recognize, in whatever tissue, unless abundant. In the future it is hoped to remove a number of vesicles unopened, that a more thorough study may be made.

The pathological picture in an acute case with frank pus in the vesicles, shows (S-16-1549) the mucosa lining the tubules to be intensely congested and the muscularis generously infiltrated with polymorphonuclear leucocytes, which are also found abundant in the lumen of the vesicle tubules. The epithelial cells lining the lumina are swollen, and fibroblasts in the deeper layers are also swollen, and in an active condition, showing rare mitotic figures.

The following description is from a specimen showing normal, acute and chronic inflamma-

tory areas. Only the pathological areas are described:

S-16-1515. The vessels of the mucosa are distended with blood. In the tunica propria are many polymorphonuclear leucocytes which can be traced well into the muscularis, though in diminishing numbers. Small irregular collections of leucocytes occur in the deeper layers and a few eosinophiles are seen. There is nowhere any definite increase in connective tissue. In the lumen are desquamated epithelial cells, polymorphonuclear leucocytes and granular debris.

The following description is from a specimen showing chronic inflammation:

S-16-1593. The normal architecture of the mucosa is lost, it being represented only by comparatively large spaces partly lined by swollen, flattened epithelial cells. These spaces contain polymorphonuclear and endothelial leucocytes. The tunica propria and muscularis are densely infiltrated with similar lymphocytes, plasma cells, and eosinophiles. There is little, if any, new formed connective tissue, although the fibroblasts are swollen and active.

The following description is from a specimen in which the vesicle tissue appeared normal and the prostatic tissue showed acute and chronic inflammation:

S-16-1899. *Seminal Vesicles.* Negative excepting for the occurrence of cyst-like cavities in the mucosa which are filled with a colloid material. *Prostate:* There is an occasional gland acinus which contains an exudate consisting of polymorphonuclear and endothelial leucocytes. A few indefinitely circumscribed foci of lymphocytes occur between the glands. Several eosinophiles are intermingled with the lymphocytes. Many of the glands contain corpora amylocea wholly or in part enveloped by foreign body giant cells.

This patient had suffered from gonorrheal arthritis for many years and at the time of operation had an enormously swollen ankle, of weeks' duration, which became normal in all respects in 48 hours, and while the piece of vesicle tissue examined was normal, foci of inflammation no doubt existed in the vesicles.

The material contained within the vesicles has varied much in amount and character. In some the material has been small, in which instances the tubular structure has been observed as wide open, with thickened walls and a content quite fluid, and but slightly cloudy. In some acute suppurative cases there has been frank pus, but in most, the material has been sero-gelatinous and opaque. In a few instances amalachous bodies have been found.

Cultures and smears of the material found in the vesicles at the time of operation has shown no growth of the gonococcus on litmus, milk, hydrocele and blood agar, with the exception of the gonococcus, which has been found in smears in some, but not all, of the early suppurative cases.

The apparent absence of the gonococcus is not clearly understood, as this organism must be the original one producing the infection. It

is generally appreciated that the gonococcus is not a virulent organism, and that its growth on culture medium is difficult, which may, in a measure, offer a sufficient explanation. These observations, however, in regard to the seminal vesicles are exactly those in chronic gonorrhoeal tubes in the female.

Secondary infections with pyogenic organisms, as mentioned by Fuller and by Squire, have not been found in my cases. It has been suggested that cultures be made by planting pieces of the vesicle on Rosenow's media, which will be done in future cases.

It is not easy, at first glance, to correlate the negative bacteriological and histological findings with a brilliant clinical result, yet there are many cases in the rheumatic group in which large painful joints have become normal within 48 hours, with entire absence of symptoms. In fact, these cases have behaved in exactly the same way as those where the histological picture of chronic inflammation was present. It may be, of course, that the particular piece of the vesicle removed for study was not diseased, which is most likely the correct explanation, as both acute and chronic inflammation was found in certain specimens, while other sections of the same vesicle were perfectly normal. Some of the cases showing a negative histology in the vesicle tissue have shown acute, and sub-acute and chronic inflammation in pieces of the prostatic tissue removed; yet this was not always the case, and in some the prostatic tissue as well as the vesicle tissue appeared normal. It does not seem that the simple splitting of the prostatic capsule with removal of a section of each lateral lobe, and multiple incisions into the remaining tissue without further drainage of it, could sufficiently destroy foci in the prostate tissue, and bring about the remarkable clinical change. The histological findings in the prostatic tissue is, however, an argument in favor of adding even this inadequate drainage to the prostate at the time of drainage of the vesicles.

Results: In the "Inflammatory Group" there are 36 cases. Fourteen of them were of the acute variety, three having suppuration in the prostate as well, and two, besides showing pus in the vesicles and prostate, had a unilateral suppurative epididymitis. There were four other cases in which rupture of the vesicle or prostatic suppuration had invaded the ischio-rectal fossa. There were five cases in which the suppuration was confined to the vesicles.

Twelve of these fourteen cases can be considered cured, and all showed the immediate improvement, incident to the evacuation of pus from whichever source. With the establishment of drainage, pain was relieved, the temperature and leucocytes dropped; and it remained only to care for the infection in the urinary tract. The course of these cases following suppuration in the vesicles and prostate, leads to the feeling that if such infection in these structures would go on to suppuration whereby all the foci of

infection became confluent, that a more rapid cure may be expected. Those cases in which the suppuration was in the vesicles alone proved the hardest to cure, as the remaining foci of infection present in the prostate required further treatment and in two patients the prostate has continued to give some evidence of chronic infection.

Twenty-two of the thirty-six cases in the *inflammatory group* were of the *chronic variety*, having received local treatment over periods of months or years, the process being relatively quiescent at times, to be followed by acute exacerbations without known cause, or from obvious lowering of the local or general resistance. Vaccines which were employed in some of the cases proved of little or no value. The cases forming this group were subjected to operation only after it was evident that the inflammatory lesions could not be drained through the natural channels.

There were four patients in this group who had sinuses following a rupture of a suppurative vesiculitis or prostatitis, each giving a history of having had an abscess presenting on the buttock which was incised. In two of these the sinus led to a vesicle in one side and in the other two it could not be determined that the sinus did not originate from the prostate. Each of these cases, however, had evidence of both vesiculitis and prostatitis.

Sixteen cases in this group required but little local treatment following operation to effect a cure, four were greatly improved, but still had slight evidence of a prostatitis, and two were little better than before the operation.

In the *rheumatic group* there were 67 cases. Many of these patients had been invalids, periodically, for many years. Some had non-articular affections, while others had multiple joints and tendon affections. Seven had so-called spurs of varying types on the under surface of the os calcis, and when present were always bilateral. Most of the cases had received nearly all known forms of treatment with varying benefit, but none had been cured. Accompanying urethral discharge, either acute or chronic, was the rule; and many who had been relatively free from rheumatic manifestations had a return of severe rheumatic symptoms following a new infection.

Drainage of the vesicles and prostate in this group has given the most striking results and this procedure has changed what was a most hopeless condition into one of the most satisfactory and brilliant surgical triumphs. Pain has disappeared from affected joints, following the ether recovery, and even large swollen joints have become normal in appearance within 24 hours to 48 hours following operation. While the explanation of this phenomenon may be wanting, the fact remains. All but one of the patients in this group may be considered cured so far as the rheumatic features are concerned, and there have been no recurrences of the ar-

thritis. Of the 67 cases in this group 52 were cured of discharge and 12 improved by appropriate treatment, subsequent to operation. In three the discharge was little changed. About half of the patients received gonococcus vaccine for varying periods following operation, but those who did not receive it fared quite as well.

The one case in this group unimproved presented such difficulties in the operation, from fibrous infiltration about the vesicles, that the vesicles were not exposed or drained. This patient had been a helpless invalid for years; nearly every joint in the body being involved, and he was unable to move or even feed himself. Although the vesicles were not drained in the operation there was a temporary improvement, especially in the swellings of the knees and in regard to pain, but he soon relapsed into his former state.

In the *pain group* there are eight cases. This group is the most unsatisfactory in regard to the results. The symptoms have been indefinite in character, associated with neurasthenic features. All means of alleviating the symptoms were employed before operation. Transitory improvement by different forms of treatment were not encouraging. All of the cases had evidence of chronic vesiculitis. Five of the eight had a discharge, and one had been proven sterile. In this case I had done a bilateral anastomosis of the vas deferens with the rete-testis three years previous to the operation on the vesicles. In this case, as in all others of this class, there was an unusual amount of fibrous infiltration about the prostate and vesicles which, I believe, accounted for the pain. Four of the cases may be considered cured, three improved, and the case in which the operation for sterility was performed, unimproved. In this case there had been an injury, years ago, to the sacrum, requiring the removal of the coccyx and the two lower segments of the sacrum. The tissues were so infiltrated by fibrous tissues that the rectum was torn, early in the operation, and the vesicles could not be exposed. All of the patients who had discharge were relieved of this feature, and all but one relieved of pain. Neurasthenic symptoms ceased in but half of the cases. On the whole, this group of cases has been the most unsatisfactory of all.

Complications attending the operation are: the opening of the rectum, post-operative hemorrhage, and epididymitis. I have opened the rectum four times. In each instance it was immediately repaired. In one the repair was permanent. In one the repair broke down and the fistulous tract was treated as an anal fistula with a satisfactory result. One had a fistula which has healed, opened and again healed. The remaining case is recent and presents every indication of being a permanent repair. There has been one case of post-operative hemorrhage, which was controlled by pressure without opening and packing the wound. There have been several cases of epididymitis, only, however,

when the scrotum has not been supported. None of the cases of epididymitis have suppurated and have been mild in character.

Following is a table of results:

TABLE OF RESULTS.

TOTAL NUMBER OF CASES OPERATED, 111.

1. "Inflammatory Group"	36 cases
A. Acute inflammation	14 "
(a) Associated with prostatic sup- puration	3 "
(b) Associated with prostatic sup- puration and unilateral epididy- mitis	2 "
(c) Associated with rupture into ischio-rectal fossa	4 "
(d) Suppuration in both vesicles only	5 "
Cured	12 cases
Improved	2 "
B. Chronic inflammation	22 cases
(a) With a persistent sinus follow- ing rupture	4 "
Cured	16 cases
Improved	4 "
Unimproved	2 "
2. "Rheumatic Group"	67 cases
(a) With periosteal changes on both os calcis	7 "
Cured (as regards rheumatic symptoms) ..	66 cases
Unimproved (as regards rheumatic symptoms) ..	1 case
Cured (as regards discharge)	52 cases
Improved (as regards discharge)	12 cases
Unimproved (as regards discharge)	3 "
3. "Pain Group"	8 cases
Cured	4 cases
Improved	3 "
Unimproved	1 "

Technique: Patient in exaggerated perineal position. An inverted x-shaped skin incision follows the bony arch of the pelvis, the apex in front and the lateral incisions extending backward to the tuberosities of the ischium. The skin flap so outlined and including fat is dissected from the underlying structures, exposing the bulb of the urethra, and the perineal tendon. The fossa on either side of the medial tendon is opened as deep as possible by blunt dissection with the index finger, identifying the apex and the posterior surface of the prostate and freeing the rectum from it, as much as possible. The median tendon and recto-urethralis muscles, which attach the rectum to the urethra, are divided as near the bulb of the urethra as possible. With division of these recto-urethral attachments the muscular fibers of the levator ani fibers may be seen attached to the posterior surface of the prostate. A cotton glove on the right hand aids the freeing of these fibers, by blunt dissection, from the posterior, and partly from the lateral, surface of the prostate. This blunt dissection is carried beyond the junction of the prostate with the bladder, exposing the vesicle area and the base of the bladder. The rectum is protected

by a piece of gauze placed to the bottom of the wound and a flat retractor either $1\frac{1}{2}$ or 2 inches in width, according to the width of the bony pelvis, and with an abrupt curve and long enough to reach the bottom of the wound, is inserted. This special retractor is furnished with a weight so that it is self-retracting. The posterior surface of the prostate and bladder are now visible. A special double tenaculum is inserted into the prostate tissue just below its junction with the bladder. By lifting the prostate with this instrument the base of the bladder and the vesicle area comes clearly into view. The outline of the vesicle may be visible beneath the fascia of Desnonvillier, provided this fascia is not much thickened by inflammatory infiltration. Even when not visible the sulcus in the median line, between the vesicles, may often be palpated which, however, is not necessary if the dissection is carried well above the superior border of the prostate. The fascia in the vesicle area, on first one side and then the other, is picked up and divided and should be so freed as to allow the vesicle to be picked up with forceps and drawn out through the fascial incision. The fascia varies greatly in thickness, being normally as thick as writing paper, may be nearly one-quarter of an inch thick when involved in extensive peri-vesiculitis. While there is usually a line of cleavage between the fascia and the vesicle, they may be so bound together that the vesicle must be opened without freeing the fascia from it. The vesicle being exposed, it is opened by multiple incisions or better by cutting away portions of the posterior wall and thus giving it freer drainage. If the ampulla of the vas is dilated it also should be incised. With the vesicle well opened its interior is swabbed with crude carbolic acid, followed by alcohol. Small rubber drainage tubes are caught in its structure by a No. 1 plain catgut suture. The prostate tenaculum is removed and the prostatic capsule freely incised over each lateral lobe, a section removed and several incisions made into the prostate tissue, as it is believed that infection lurks therein to some degree in nearly, if not all, instances of seminal vesicle infection. The retractor and gauze protecting the rectum is removed and the rectum inspected to be sure that it has not been opened. The divided muscles are united by catgut, taking pains to pick up the fibers of the levator ani muscles.

After the divided muscles and the median tendon have been united, the skin-flap is replaced and the wound closed by interrupted silk-worm gut sutures, and the drainage tubes, sutured into the vesicles, protruding from either angle of the wound. A rectal plug four inches long, composed of rubber tubing surrounded by iodoform gauze, is inserted into the rectum and held by suture to the anal margin. In this way the rectum is made to occupy its normal position and close the space above the muscular

repair. By filling the space by this method, oozing is less apt to result in an accumulation, and the rectum being held open by the tube, allows the escape of gas during the period that the bowels are confined.

A scrotal dressing which holds the testicles well elevated is applied to prevent the possibility of epididymitis, which is prone to occur. A dry dressing is applied and held in position by a "T" bandage.

After-care: consists in keeping the patient on a light diet, the administration of pill opii, grains one, morning and night for five days in order that no movement from the bowels may occur. On the sixth day the pill opii is omitted, the rectal plug removed and an oil enema of two ounces is injected into the rectum through a long-nosed syringe and a dose of castor oil administered. The patient is then placed on a more substantial diet. One or more corrosive dressings are applied to the wound daily and the drainage tubes are allowed to remain from ten to fourteen days. Earlier removal of these tubes may prevent sufficient drainage and result in the recurrence of symptoms. The areas occupied by the tubes usually heal in from three to five days following their removal. A suspensory bandage should be worn for a period of at least one month. Any evidence of prostaticitis or anterior urethritis should receive appropriate local treatment.

FEEBLE-MINDEDNESS AS SEEN IN COURT.

By V. V. ANDERSON, M.D., M.A., BOSTON.

Medical Director, Municipal Court.

THE feeble-minded possibly form the most important single group of which our courts need to take cognizance. They furnish a substantial nucleus to that most expensive body of individuals who clog the machinery of justice, who spend their lives in and out of penal institutions and furnish data for the astonishing facts of recidivism; facts which have served to awaken our social conscience to the need of more adequate treatment under the law for repeated offenders.

Now the duty of criminal law is the protection of society from anti-social acts; and in this capacity the court stands as one of the greatest bulwarks of society in insuring social welfare. Thousands of individuals are yearly arraigned, charged with various offenses, who are deterred from further anti-social conduct, who profit well by the lessons learned from arrest and detention, or judicial reprimand, or short-term sentences, or probationary treatment. Particularly the latter, for probation under modern scientific methods is literally working wonders,

doing things which years ago were scarcely breathed of. As one prominent prison official has put it, "probation is fast breaking down prison walls." But then there remains a very well-defined group, who do not profit by the usual methods, who fail to respond properly to any form of treatment, who on being released from prison very quickly find themselves again in court; who, when placed on probation, are usually surrendered, if not from the first placed on inside probation—that is, within homes and institutions not penal in character—who seem totally unable to adapt themselves to society's laws and customs, and thus are arrested over and over and over again.

A study of this class indicates that feeble-mindedness stands as a causative factor in from 25% to 40% of cases. In going over a group of one thousand offenders, individuals who were difficult problems and selected by the court and probation officer as needing mental examinations, I found 36% feeble-minded. Let this not be understood as representing the per cent. of feeble-mindedness among offenders in general. This study, like other studies coming from penal institutions, was made on a selected group. Under our present system all those believed capable of reformation under probation are given the opportunity.

In consequence we find a much larger percentage of dull and incapable individuals sent to penal institutions than those placed on probation, and as a matter of course a larger percentage of feeble-mindedness is to be expected. Such studies are to be interpreted as showing conditions that exist among the group investigated only.

If 25% or 35% or 40% of selected and difficult problems among repeated offenders in court or among inmates of penal institutions are found feeble-minded, one does not mean that 25% or 35% or 40% of all offenders are feeble-minded; or that such a percentage of crime is to be explained on the basis of feeble-mindedness.

The fact is that the most reliable work done indicates that not more than 10% of offenders in general are feeble-minded; but this 10% give almost as much trouble as all the rest put together. It is this 10% that form the very backbone to recidivism whose treatment has been so unintelligent, so expensive, and so futile. All because society has yet to recognize their needs.

It is with the idea of telling you about these feeble-minded people, as one sees them in court, that I have come here this evening. The case histories of one hundred feeble-minded individuals were taken from the files and here are some of the data they contain:

All showed sufficient deviation in childhood to have warranted an early recognition of their condition, and the institution of proper remedial measures to prevent careers that could with reasonable certainty have been predicted. The

following table indicates their ability to profit by the training afforded them in the public schools—bearing in mind that the majority of these individuals started to school at the usual age and quit at 14, 15 and 16 years.

TABLE REPRESENTING GRADE REACHED IN SCHOOL.

Primary	4%
First Grade, Grammar	11%
Second Grade, Grammar	4%
Third Grade, Grammar	12%
Fourth Grade, Grammar	14%
Fifth Grade, Grammar	23%
Sixth Grade, Grammar	11%
Seventh Grade, Grammar	9%
Eighth Grade, Grammar	7%
Data not obtained	3%
No schooling at all	2%
TOTAL	100%

Twenty-seven per cent. were able to get beyond the fifth grade, whether by their own efforts or whether forced up from year to year, in order to get rid of them. I do not know. However, these figures will bear carrying in mind in connection with some tables that are to follow. Sixty-eight per cent. of our cases were never able to get further than the fifth grade and showed by the poor character of school work their unfitness for the training society demanded of its future citizens, giving early promise of that mental handicap which later on demonstrated itself in an inability to compete on equal terms with their fellows in the more strenuous struggles of life. Recognized as failures in that institution which is supposed to train men for life's battles, these unfortunates are set adrift in early adolescence to earn a livelihood. The following table will show just how well this was accomplished.

TABLE OF ECONOMIC EFFICIENCY.

Regularly employed	4%
Irregularly employed	21%
Odd jobs	28%
Work at home	13%
Do not work at all	34%
TOTAL	100%

Seventy-five per cent. are not self-supporting. Twenty-five per cent. could be considered as definitely self-supporting. Is it any wonder that, being so economically unstable, they drift aimlessly through life, falling into the hands of charitable organizations, criminal courts, penal institutions, almshouses, and such!

And this is not all, for not only are they incapable of measuring up to the economic standards set by their normal fellows, but likewise are they unable to appreciate their obligations to the order of society; and, consequently, fail to obey its mandates. And so they come before the bar of justice. Now that same lack of learning capacity, that same inability to profit by mistakes as demonstrated so forcibly in their failure to advance in school, and later to earn a livelihood, again crops out in their inability to

profit by the usual treatment meted out to offenders in court. If put on probation, they have to be surrendered, or placed on inside probation in the House of the Good Shepherd, the Welcome House, and such. If sent to prison, on being released they soon again appear in court to reenact the same process over and over.

The following table of arrests will give some idea of the frequency with which the machinery of the court is called into use for handling these individuals. Bear in mind that all of these records are recent ones and that most of the individuals had old record cards which were not gone into, these sufficing very well for the purpose in hand.

TABLE OF ARRESTS.

Drunkenness	1436 arrests
Chastity	163 "
Larceny	45 "
Assault and Battery	11 "
Surrendered	150 times
Vagrancy	4 arrests
Carrying Revolver	1 "
Breaking Glass	3 "
Profanity	2 "
Common Brawler	1 "
Possession of Drugs	8 "
Stubborn Child	1 "

TOTALLING 1825

This averages 18.25 arrests apiece. The futility of any method of treatment is demonstrated by their apparent inability to profit by what is done for them and the unfailing certainty with which they return to be handled over again.

No matter what is tried, the effect seems to be the same. If released by the probation officer, soon they are back again. If brought to court, reprimanded by the judge, and their case put on file, soon they will appear in court again. If put on probation, their chances of completing it successfully are so small as to be almost negligible. If sent to prison, they are again locked up within a short while after being released. The two following tables will indicate some of the methods of treatment tried by the court:

TABLE OF PROBATION.

NO. OF TIMES PLACED ON PROBATION	AVERAGE	NO. OF TIMES SURRENDERED	AVERAGE	NO. OF TIMES ON INSIDE PRO- BATION	AVERAGE
423	4.32	220	2.20	118	1.18

These one hundred feeble-minded individuals were placed on probation 432 times, one hundred and eighteen of these were what is known as inside probation; that is they were put within the House of the Good Shepherd or the Welcome House for the entire period of their probation one hundred eighteen times.

Three hundred fourteen times they were tried on outside probation, secured employment, given every chance to make good, and helped where

ever possible, but had to be surrendered two hundred and twenty times. In short, out of the four hundred thirty-two probationary periods, they did not quite average one successful probation apiece.

Considering these one hundred cases, the chances were better than four to one against their being able to conduct themselves normally for a six months' probationary period.

The court also tried penal treatment in these cases, as the following table will show:

TABLE OF PENAL TREATMENT.

No. of Sentences	Average Each	Length of Time Sentenced	Average Each	No. of Inde- terminates	Average Each
735	7.35	106 yrs.	1 yr. +	250	2½

Seven hundred and thirty-five sentences were imposed, or 7.35 each, amounting in fixed time to 106 years, not including 250 indeterminate sentences, such as State Farm and the Reformatory for Women, where the time to be served is not fixed, amounting to periods of several months, more or less, to each sentence. Now this is not the worst of it all. These same individuals continue piling up records and a veritable vicious circle is created.

Finally as an adequate explanation of all this social mal-adjustment, incapacity in school, inability to earn a livelihood, lack of appreciation of their obligations to the order of society, and incapacity for understanding and measuring up to the social standards of fully grown men and women, the following table is most significant:

TABLE OF MENTAL LEVEL.

Between 7 and 8 years	4%
Between 8 and 9 years	30%
Between 9 and 10 years	41%
Between 10 and 11 years	25%
	100%

Though all were adult in years and physical development, 75% had the mental level of children below ten years. Now this, taken in connection with the fact that 75% were not self-supporting and 73% never got further than the fifth grade in school, gives us a group consisting of about three-fourths of our cases which, it seems, would have been more profitable for society to have recognized years ago and to have saved all this economic waste, protecting itself—as well as these individuals—from their own weaknesses, making them happy and useful in a limited environment created for their special needs. By failing to do so the mental arrest from which they suffered has become so firmly fixed that all possible chance for improvement is lost; for there was a time when a chance existed in each and every one of these cases for some advance along the lines of proper habit training.

But, even as it is now, it is worth more to society—as it is clearly more economical and undoubtedly more humane—to provide proper hospital and other treatment suited to the needs of these individuals than to go on locking them up in jails and turning them out again; and then locking them up and turning them out again; and repeating the process over and over.

By failing to interpret correctly the condition of these weaker members, society has acted irrationally—to say nothing of the humanity side of the question. Because of society's failure to provide proper facilities to care for these individuals, our courts must go on committing to penal institutions offenders whose central nervous systems are so conspicuously undeveloped as not to be capable of adapting themselves to the conditions of normal life.

Industrial Health Insurance.

THE PROPOSED HEALTH INSURANCE LEGISLATION.*

By FRANCIS W. ANTHONY, M.D., HAVERHILL, MASS.

In the plan of proposed health insurance legislation the main ideas are these: That every person employed in the Commonwealth, except those receiving regular wages in excess of \$100 per month, shall be compelled to be insured. There are some exceptions, including casual employees. There is some provision made for voluntary insurance. Under the benefits of this act come medical, surgical, and nursing supplies, sickness benefit to the insured person or the dependent members of his family, maternity benefits, funeral benefits, and the same medical aid for dependent members of the family.

Complicated arrangements are made by which local societies, called "funds," take charge of the work in a given locality, and existing fraternal orders and societies and benefit organizations can be utilized, under certain restrictions. Employers, also under certain restrictions, may organize funds. A panel of physicians attend to this work, the sick person having freedom of choice as to the physician he wishes, provided this physician is doing insurance work.

There are many provisions for arbitration, the settling of disputes, the division into districts, the establishment of a medical advisory board, the qualifications required for societies to be approved, the power of the commissioners, and the thousand and one details that must make a complicated scheme of this nature.

The subject of industrial health legislation is one of the largest that has been presented at any time to the citizens of Massachusetts for

* Read before the Berkshire County District Medical Society, February 8, 1917; reprinted from the *Haverhill Gazette*.

their consideration. Perhaps before I proceed to discuss it, I should, as they say in court, qualify myself. I do not stand forth as an authority; it simply chances that certain opportunities have been open to me for observation, which opportunities I have taken advantage of to the best of my ability.

I have been for many years a member of the medical committee advisory to the accident board, helping to frame the medical principles by the acceptance of which the accident board outlined its medical policy. I am a member of the committee appointed by the council of the Massachusetts Medical Society to get in touch with the question of industrial health legislation and with the recess committee appointed for its consideration, our duties in that respect being neither to advocate nor to oppose the measure, but rather to see, as far as it was in our power to see, that, if such legislation was presented, it included such provisions as might not be to the disadvantage both of the physician and of the sick person benefited by the act.

I have also been, since its inception, the president of the Associated Charities in Haverhill, a city of 50,000 inhabitants, with the usual amount of dependency, and for nearly 29 years I have enjoyed in that vicinity a practice that has taken me among both the rich and the poor, with work in and out of the hospitals. I am also now a trustee of the Bridgewater State Farm and the Tewksbury State Infirmary, a member of the corporation of the Waverley School for Feeble-minded and a director of the Massachusetts Society for Mental Hygiene, as well as President of the Massachusetts Society of Examining Physicians and Surgeons. In the carrying out of these varied duties I have been able to look upon this subject from different viewpoints. But I speak today as an individual simply, and what I say may or may not represent the views of my associates.

The principle of the proposed act is that it is an extension of the principles carried out in the industrial accident legislation, namely, that it is for the economic advantage of the employer and the state, as well as of the employee, that the conditions pertaining to health be made as nearly perfect as possible in order that there may be less dependency and larger economic value in work, and a better preparation for time of emergency and old age.

Those who are proponents of the measure claim that the need for such legislation is shown by surveys that have been taken in several localities, which, to some minds, have demonstrated the fact that a large amount of sickness is not properly treated; that there is not sufficient preventive work done; that many work when unable to work and return to work before they are well, driven by the force of absolute need and want.

Their claim is that an individual working by himself can accomplish nothing, and that the

only hope of this economic gain is through community work and legislation which will grant the benefit proposed and lay upon the community the burden of expense, the general plan outlined being that two-fifths of the expense shall be borne by the employee, two-fifths by the employer, and one-fifth by the state.

The benefits proposed cover not only the workman himself, but the members of his family as well, and in most of the plans proposed, include funeral benefits and maternity benefits, while some plans add old-age pensions and non-employment insurance. Those who favor the plan point to the work as done in other countries, notably in Germany, and particularly in Leipzig, as illustrating what can be accomplished, and they point also to the fact that the measure has spread over Russia, Germany, Austria-Hungary, England, and some other nationalities. They claim that it is not only a matter of economy but a matter of humanity as well to aid the less fortunate individuals in the community.

The opponents, on the other hand, say that even admitting a bad condition to exist, in a measure that is "a question of A meeting together with B and deciding what C shall do for the interest of D." They state that the economic value to the employer is greatly exaggerated, and call attention to what they claim to be a fact—that the additional accounting and book-keeping in the state of Massachusetts would alone cost the employers of that Commonwealth one million dollars a year for the additional work involved.

They ask us to note the countries that have taken up the work, and point out the fact that they are countries that are monarchies or monarchistic in government, that the project is an offspring of Russia, developed and brought up to maturity in Germany and later given part of its education in England, but that it is unadapted to the democratic form of government of America. They maintain that it is practically Socialism, or at least communism, in contrast with individualism, which they hold has been what has given America its growth up to the present time. They point out the fact that at the present time no state in the Union has adopted the measure, and ask why Massachusetts should be the "goat" upon which it is to be first tried. They also note that the increased cost in this measure must be ultimately laid upon the consumer because the employer would at once add his two-fifths of the cost to the cost of production.

It is unreasonable to suppose that if the employee is unable—absolutely unable, as the proponents say—now to pay the cost of sickness, he would then be able to meet the two-fifths cost imposed as a burden upon him, and would, therefore, demand a raise of wages to cover this, again forcing the employer to lay this as an added cost upon production, while the one-fifth paid by the state would, of course, be borne

by an increased tax rate, the taxpayer and the consumer ultimately paying the whole bill. The reply by the proponents is "that is exactly the intent of the measure and, if the measure is wise, that is the fairest way to meet the financial needs." The opponents also call attention to the fact that this measure does not care for several other classes, that it does not provide for the casual workers nor several other classes, that it does not provide for the invalid, and that invalid pensions, old-age pensions and non-employment pensions will follow.

Organized labor has made as yet, so far as I know, no absolute statement of its position. One of its leaders has publicly stated that it is in a receptive mood and wishes to know more about the subject before it comes to a decision. This gentleman calls attention to the alleged fact that there are in Massachusetts over ten thousand workers earning \$540 a year or less, and says, "give us a living wage and we will take care of ourselves." Mr. Abrams said in Boston last week, "Organized labor would like health insurance, but will not pay one cent toward its cost." The medical profession has, by the body representing its largest society, taken no vote for or against the measure, the only vote on record being one of the council of the Massachusetts Medical Society, that "owing to the magnitude of the question, the recess committee be requested not to present a bill the present year, thus giving an opportunity for the citizens of the Commonwealth to become more conversant with the subject."

From my acquaintance with the statistics of the organized charity work of the State, I am aware that when we consider the causes of dependency, sickness represents about 28%, non-employment in normal years 26%, alcohol in no-license years about 12%, in license years about 17% as a sole cause, and as a contributing cause in 50%. The question raised by this legislation is, in brief, "why cannot workingmen today pay for their medical treatment?" and the problem becomes practically one of dependency.

The modern method of treating dependency is to remove, if possible, its cause, and hence if sickness, non-employment, and the abuse of alcohol could be removed by some magic power, practically two-thirds of the dependency of the State would cease. That an attack upon sickness along two lines is to the highest degree advisable, is beyond argument.

First, along the line of preventive medicine, attacking the cause of sickness; and second, along the line of increased efficiency in diagnosis and treatment. Preventive medicine, affecting in its results the whole State, has always been looked upon as a State problem, and any measures that today could increase intelligently the activities of the state health authorities, removed from all political considerations

and guided by the same counsel of sane men, would be for the benefit of the State.

Any measure that increased the opportunities for the poor man to obtain the best opinion in time of sickness and the best treatment would be for his benefit, that of his employer, the community and the State. The problem is practically one of the best methods of handling a question of dependency.

At present, after six months' consideration of the subject, I hold an opinion, which I hold tentatively, with a mind open to arguments that might convince me, but held none the less with some degree of positiveness as the result of my observation, namely, that John Meade is right in saying that the basis of the whole question is the question of the living wage; but I must go further and say it is a question of the living wage of the honest, sober, properly born, clean workingman; but that from the ranks of the workingmen, when they become dependents and the actual or potential recipients of charity, must be dealt with the alcoholic, the syphilitic, the subject of venereal disease, the feeble-minded, the deserter, the wilful neglecter of his family.

Eliminating these, or perhaps eliminating is not the best word, let us rather say compelling these by community force to act the part of men, would cause the charity of the individual, the employer, the municipality and the State to be poured out in the fullest measure for those who have been in the past years known as the "deserving poor," and by that I mean those, who through no fault of their own, have fallen into vicissitudes that come to many of mankind.

The plan that I suggest as an extension of Mr. Meade's idea is to a degree complicated, but no more so than the proposed legislation. It considers the treatment of the chief causes that bring about dependency—outside of an insufficient wage. It involves dealing in a definite manner with the chronic alcoholic, who himself or with his family, becomes dependent. It means the committal of the dependent chronic alcoholic to the State Farm upon an indefinite sentence, at which place, having been first built up in the hospital department, he shall be set to work at employment that does not interfere with the employment of most of the organized labor of the State, namely, the preparation of materials used in State institutions, the drainage and reclamation of swamp and untilled lands, the preparation of road materials, and the building of and maintenance of State roads on an extensive scale.

Any man under 55 years of age so committed should be thus employed, and should be paid the going wage for the work that he does, and, after deducting the expense of his keep, the balance should be sent to the overseers of the poor of the town or city where he resides, to be expended for the benefit of his family. To this

system should be attached the parole system, by which, if he is so built up by this treatment,—and you may say that it is treatment, because many of these men are diseased—then, at such time as he gives evidence that he can be tried out once more in the community, he may be released upon parole, but can be brought back if he fails to do his duty to himself and to his family.

I am fully aware of the practical uselessness of the present method of dealing with chronic alcoholics. A fine, a sentence with suspension of the same, a term in a local jail, another fine, a suspended sentence, a sentence to the State Farm, a release, a few weeks, or at most, months, and a return, and there is a constant stream of in-goers and out-goers, whose faces become familiar to the officers of the institution. The only advantage of the present plan is that it keeps out of the public eye for a while and off the streets a very undesirable class of the community.

Syphilis and gonorrhea should be reportable diseases. The State should furnish treatment for them. I am aware that it would be almost impossible to get a bill to this effect through any legislature, owing to the large per cent. of men who, having had gonorrhea themselves, deplore the necessary publicity. None the less, if these diseases were reportable, under heavy penalty for failure to report, and were properly treated, the amount of sickness in homes would be most materially diminished and the larger part of the gynecological clinics would close their doors.

The feeble-minded should be recognized in the public schools, taught to the extent that teaching is possible for them, prevented from marrying or producing their kind, segregated in such cases as they are a menace to the community, and carefully safeguarded under all conditions.

The man who deserts his family, leaving them dependent, or who wilfully neglects to provide for them, should have the present laws against such procedure actively enforced with heavier penalty, in that his term of sentence should be longer; he should be placed at more active employment, and his surplus of his earnings, over his keep, sent to the support of those properly dependent upon him.

If you thus take out of the community, or provide for a compulsory method for them to take care of those dependent upon them, and if you then adopt Mr. Meade's slogan and pay a living wage to the workers who would be left, I believe you will answer the question of industrial health, provided that at the same time you strengthen materially the national and State authorities in the line of preventive medicine. I can but feel that the proposed industrial health legislation is an opiate and not a remedy, that it does not strike at the fundamental reason why so large a number of workmen cannot meet their bills in time of sickness and cannot secure proper treatment and care. The dis-

eased condition is real, but I doubt the wisdom of the remedy proposed.

It is encouraging, however, that all this discussion shows a much more live social conscience, and the groping in this direction, and that, in an attempt to solve the great problems of the universe must, in the end, work out something for the benefit of the community. Let us be careful, however, that when we decide upon a plan definitely, it reaches the fundamental difficulty.

The proposed legislation takes from the workman, who already has but a pittance, lays a burden on the employer without taking into consideration that a large per cent. of the sickness is from preventable causes, for which he is not in any way responsible; diverts to the purposes of the act State funds that might be utilized in increasing preventive work or, as suggested by Frank Dresser of Worcester, in establishing diagnostic centers; and, after it is in force, leaves untouched and unremedied the causes of dependency which prevent he normal workingman from meeting the situation himself, and leaves him hampered and bearing too much of the burden that is laid upon the community by the man who, through defect of inheritance or lack of will power and self-control, cannot or, unless compelled, will not bear the burden of care of himself and his family. For this reason—that it is not basic in its attempt to remedy an evil—I cannot endorse it.

This legislation does attempt to remedy one of the causes of dependency, and, in a limited sense, it acts as an aid in preventive work and in the treatment of an unhealthy condition, but it does not strike at the root of the matter. It attempts to remedy an evil by legislation compulsory in its nature, instead of working out a plan by which, through the coöperation of the employee and of the employer—as Prof. Gregory has pointed out is the ideal way to accomplish reform—a system which shall be for the benefit of all concerned shall be developed.

Instead of this it grasps by the neck the workingman and orders him to pay two-fifths of the cost of things supposed to be for his benefit, and it orders him to do this while, in the same breath, it tells him that this is being done because he cannot afford to pay for it himself, for the reason that he has nothing left over from his low living wage.

At the same time it takes by the neck the employer and compels him to pay for the remedy of conditions, some of which he is individually responsible for, if his plant is not sanitary in every respect, but gives him little encouragement if his plant is kept up to the highest degree of sanitary efficiency. It compels both the employed and the employer to pay, as they now do, for those lax in State or local health preventive measures which are conducive to disease, but it also compels them, most unfairly, to pay for the sickness and distress due to the over-indulgence in appetites of fellow employ-

ees, over whose acts neither the employer nor the honest workman has little, if any, control. In other words, it notes a condition capable of great improvement, and offers what it calls a remedy for the same, but in that remedy, as I have tried to point out, it takes no action tending toward the control of those things that are in such a very large per cent. the chief cause in the production of the condition which all deplore.

Moreover, it forgets that when an act like the one proposed goes into effect, the employer will at once institute medical examination, before a man or woman is hired, to determine the health, so that none but those in full health and unblemished may be employed.

If these examinations were made to prevent a man who had heart disease from taking a job that would soon kill him, or a man with a bad rupture from taking one requiring heavy lifting, and if easier places were provided, as is done in some establishments, the examination would be very helpful; but if they meant barring from employment those not in supreme strength, tell me, since they could not get insurance nor work, who would support them and their families?

They need insurance more than any class, but they are barred. Is this a good proposition?

In closing, I repeat, if John Smith is a working man, not feeble-minded, not addicted to the abuse of intoxicating liquors, not sick from venereal disease, if he is not neglectful of his family, nor addicted to any drug habit, if he can exercise normal control over his appetites and desires, he can provide for himself and his family in health and in sickness, provided that he be paid a living wage.

If, therefore, we pay him the living wage, if we strengthen the influence of the national, State and local boards of health in work for the prevention of disease, and take care in the proper way of the individual members of society, there is no problem left.

The problem is a huge one, but the public should not be put to sleep, so that its eyes may not see the underlying cause of difficulty. Better to keep it awake, arouse it if necessary, and lay the facts before it, so that when an attack is made at this evil the very root may be the object of attack.

An opiate is not a remedy; it is soporific—not curative.

SPRINGFIELD ACADEMY OF MEDICINE.—The March meeting of the Academy was held at 137½ State Street, Springfield, Mass., on Tuesday, March 13, at 8.15 P.M. Dr. Alfred Stengel of Philadelphia spoke on "The Diagnosis and Treatment of Chronic Anemic Conditions."

Academy Notes.

Our Nurses Registry continues its success. The present registration is 180. In the past 12 months nearly 1400 nurses have been sent out, an average of about 120 a month or 4 a day. The registry is ready to serve everybody, day or night. Telephone, River 5000.

DR. L. D. CHAPIN, Secretary.

A WISE PRELIMINARY TO THE ADOPTION OF ANY COMPULSORY HEALTH INSURANCE ACT.*

By E. A. CODMAN, M.D., BOSTON.

THE medical profession must consider the question of Health Insurance. The question is so large that it involves our duties as citizens, our interests as a profession, as well as our pocket-books as consumers and bread-winners.

The proposed law, or any law similar to it, will confessedly cause great expense,—nominally shared by the employer, the employee and the State, but in fact paid by the public in the end. This expense has been estimated at as high as twenty-five million for Massachusetts. A fair estimate for the administrative work necessary for it is a million per annum, without considering benefits for loss of wages and fees to the physicians and hospitals.

The object of the proposed law is to improve the condition of the public health, and to furnish a better organization whereby the known facts of medical science may be applied to the relief of disease. Its proponents do not claim that it is primarily an industrial measure. It is not my intention to enter into a consideration of all the pros and cons of a plan at present so widely discussed; it is merely to suggest another point of view which seems to me worth considering.

Instead of enacting a further law which is bound to be difficult in execution, sure to cause great expense, and which is uncertain of attaining its object, why not spend some of this money in improving the machinery and conditions which we already have? Suppose, for instance, that a statute were enacted, compelling every hospital in the State of Massachusetts to publish, or to provide a register in available form of the following facts about every case which is treated by the institution:

1. The symptoms of which the patient complains.
2. The diagnosis or diagnoses on which treatment is based.
3. An outline of the treatment given.
4. The name of the physician or surgeon who undertook the treatment.
5. The complications which occurred during convalescence.
6. Evidence that an effort was made by the trustees to obtain from the patient, his friends and his physician knowledge of what the result of his treatment was at the expiration of a year.
7. Evidence to show that the Trustees had caused investigation to be made to determine the reason for failure in every case which was not relieved.

* Read before the Westfield Medical Society, February 8, 1917.

A commission could be appointed and empowered to see that the trustees of every hospital in Massachusetts had competent machinery to make a practical survey of these data for each individual who had been under their care, with a view to fixing the responsibility for the treatment in each case, and to giving the physician or surgeon who undertakes such treatment the credit for success, or the opportunity to explain the failure, and to ask for the necessary equipment to prevent such failures in the future.

Already this system, under the name of the End Result System, has been recommended by the Clinical Congress of Surgeons of North America. It is already in use in some hospitals in the State, and the reasons why it is not in others, are as a rule: lack of money to provide the clerical assistance, and inertia on the part of the boards of trustees and members of the staffs. If the State of Massachusetts could spend far less than one million dollars for furnishing hospitals with the clerical help necessary to do the card cataloging required by this system, and empower a commission to enforce it, there would be far less need for Industrial Health Insurance.

The medical profession is composed for the most part of high-minded men who acknowledge that at present the public health is not as well cared for as it could be, were organization directed more *definitely for that purpose*. The individual practitioner works hard, and realizes that only too often his work is not as well directed and effective as it should be. He would be glad to co-operate in any just way to secure a better organization for the care of the sick throughout the State; but from the time he is a medical student and an interne, he is taught by example in the hospitals, where he sees the best known men in his profession, that it is right for him to undertake the care of cases according to the number of the ward, the day of the week, his seniority standing, or his whim as to whether or not the case is interesting; but *no example shows him that he has no right to undertake the care of cases which he is not qualified to treat*. Our system of medical education is based on these so-called hospital privileges, and the medical student who has been taught high-minded medical ethics by precept, is constantly contrasting the *practical example* of the successful men, many of whom are his teachers, who are held up to him as the leaders in his profession.

The loose way in which these men undertake treatment without *definite written diagnosis*, or treatment without proof that their experience or study (not their positions) has qualified them to undertake the treatment of unusual or difficult conditions, is the example which results in the custom of permitting each little practitioner to do the same. To be sure, the public allows itself to be treated without diagnosis, and is still unwilling to pay for thoroughness.

Under present conditions the practitioner cannot take the time to be thorough, because his patient cannot pay for his time, if he wishes to do so. Of the patients who come to the practitioner, less than 10% need expert or thorough diagnosis or treatment. The problem, therefore, is to separate the routine simple case from the unusual and difficult case. As it is now in our hospitals the "best men" wish to have both. The combination has become incompatible.

If the people of this State want to begin with compulsory measures, that compulsion should begin at the top rather than at the bottom. Compel the trustees of hospitals to do their duty by the funds entrusted to them for the care of the sick, and the advance and promulgation of medical knowledge, and the public will get better organized medical attention than it does to-day, or would get under a Health Insurance Act like the *Doten Bill*. In matters of reform it is customary to begin at the bottom: in the present instance, as in many others, a short-cut might be made by reforming the men at the top, whose example is copied all the way down the line with a constantly diminishing standard.

At present the failure to make universal use of the End Result System cannot be laid at the door of the bulk of medical practitioners or medical staffs, *it is much more a result of the time-honored habits of the leading members of the medical profession, and the methods of the boards of trustees of endowed hospitals*. The expense to the State of appointing a commission to see that the funds already allotted to our endowed and State and municipal institutions are efficiently used with a view to successful treatment, would be a relatively small amount compared with that of administering a health insurance act. This method would in effect be equivalent to adopting centers for expert diagnosis and skilled treatment in different parts of the State to co-operate with local practitioners. Equipment for these centers is already present in the numerous hospitals scattered about, but the hospitals are now used too often to further the reputations of the members of their staffs, rather than as organized centers for diagnosis and skilled treatment for the delivery of a product in the form of successful cases. The financial return to the members of hospital staffs, although indirect, is greater than the salaries which would have to be paid to obtain competent and skilled treatment.

The closed staff principle keeps many doctors out of touch with the hospital, who could work for the hospital with mutual benefit, and keeps many men in the hospital who not only do not aid, but who do interfere with, the advance of the institution in efficient methods. There is too often the old story of the dog in the manger. There is plenty of room in our hospitals, if no one is allowed to be incompetent.

If the committee which has been appointed by the legislature to consider the question of Health Insurance does not investigate these hospital abuses, and does not weigh them in the scale, it seems to me that it is not doing its full duty.

Do the advocates of Health Insurance, suppose that efficient care of the public health can be obtained by offering a panel of physicians from whom the patient may choose? This is to deny the development of modern medical science which is so vast that no single physician can possibly give satisfactory service to his cases without extensive co-operation with others.

How can an ordinary citizen select a physician under present conditions? Does he know the difference between a man who has no hospital affiliation and one who has? Do the hospital trustees themselves know who is competent? If the End Result System were in force, the hospital trustees would be obliged to know who is competent to take charge of any special class of cases. And if each hospital were a diagnostic center for its neighborhood, it also would be a registering center for the incidence of disease, and an information center to aid any patient to get competent service. It should also aid the Board of Health, and, by education of the public, be a preventive center.

A hospital is the only place where it is possible to subdivide the practice of medicine, so that a suitable relation can be established between the difficult character of the diagnosis and the treatment of an individual case, and the experience, skill and judgment of the individual physician or surgeon who is to take charge of it.

In a hospital the various branches necessary for the elaboration of different phases of work to arrive at difficult diagnoses, or complicated methods of treatment, can be subdivided so that individual physicians may each do work suited to their abilities, experience and training.

But the most rational argument for the Health Insurance Act is that it obliges the wage-earner to lay by enough to pay for care when sickness does come. At present it is claimed that a \$12-a-week man does not earn enough to pay a doctor and that hence when sickness comes, he and his family become public charges. Would they become public charges, if our hospitals were organized to *cure* instead of *to treat*? In other words, if it were made the duty of trustees to see to it that the patient was cured, if he could be cured? *Few trustees even make the effort to see whether their patients are cured or not.* Much less do they attempt to place any responsibility on the members of their staffs for failure to cure or relieve. Would a panel of individual physicians get as good results as the well equipped hospitals we already have would, if they were really run for the interests of the patients instead of for the interests of the staffs? Would the incur-

able and bad or delayed results be a smaller percentage?

As for the self-respect which the wage-earner would get from feeling that under the Health Insurance Act he had paid for his treatment,—does the word *Compulsory* Health Insurance convey the idea of self-respect?

If the necessary funds were raised by universal state taxation, would that self-respect not be as great, and would not those who are too feeble to work share it also, instead of only the industrial class?

Remember that the trustees of our hospitals are as a rule successful business men selected for that very reason. They are the men whose fortunes the \$12-a-week men have helped to make. Why not make the compulsory part apply to these trustees, so that they can use their proved ability for efficient accumulation, to show efficient disbursement of the funds entrusted to them,—really for Health Insurance.

The End Result System is not an impossible ideal. It is a practical plan recommended by the Committee on the Standardization of Hospitals of the Clinical Congress of Surgeons of North America. It has already been in partial use in some of our more progressive hospitals, and is steadily finding favor. *Even if some Health Insurance Act is to follow, why not prepare the way for its proper use by organizing the machinery we already have for the treatment of the sick and disabled?*

Some idea of the amount now spent in Massachusetts for the care of public health and sanitation, and for the maintenance and care of the sick, poor, and insane, may be derived from the following figures:

INVESTMENT OF MASSACHUSETTS (INSTITUTIONS) IN
REAL AND PERSONAL PROPERTY.

Report of State Board of Insanity ..	\$ 17,610,837.84
Report of State Bureau of Statistics ..	4,732,129.53
Report of State Board of Charities ..	
State Institutions	6,900,736.94
Certain (\$02) Endowed Institutions..	121,413,052.21
Estimated from*	
Report of State Bureau of Statistics ..	
Municipalities and towns	49,057,612.00
	<hr/>
	\$199,714,468.52

The annual expenditure for these purposes may be estimated as follows:

Appropriations for	
State Board of Insanity ..	} \$ 6,199,647.91
State Board of Charities ..	
State Institutions ..	
Certain (\$02) Endowed Institutions..	15,698,875.44
Report of Bureau of Statistics ..	
Municipalities and towns	13,730,586.46
Health Appropriation, 1915	385,814.84
	<hr/>
	\$36,014,924.65

This means that we have at least \$200,000,000 invested for the care of our public health and

* If the annual expense is \$13,730,586.46, the investment may be determined as proportionate to the expenditure of the state institutions to their investment.

for the use of that proportion of our sick, poor, and insane who need public help.

It means that in addition to this immense amount invested in real estate, buildings and equipment, we also spend \$36,000,000 annually for the maintenance of these persons and for the care of the public health in general.

This estimate does not include federal aid given in pensions, in quarantine or other work for sanitation, nor private personal charity, nor private charities and associations not incorporated.

There is no means of determining how many of our 4,000,000 people actually do have or need public aid in any one year.

Now as there is an average of about one doctor to every sixty persons who are seriously sick in one year in Massachusetts, it seems as if a commission might be able to consolidate and organize the equipment and personnel we already have without \$20,000,000 more per annum.

Suppose, for instance, that such a commission should oblige each hospital to keep on file End Result Cards of each patient it treats, and to send a duplicate of each card to the Central Office.

Suppose that the commission should engage a unit of diagnosticians each one of whom should be skilled in his own particular branch, e.g.:—

1. and 2. A general clinician with assistant.
3. A roentgenologist.
4. A chemist.
5. A bacteriologist.
6. A serologist.
7. An eye, ear, nose and throat specialist.
8. A cystoscopist.
9. A pathologist.
10. A record expert—

and send this diagnostic unit in turn to each hospital in the State with instructions:

1. To organize similar local units in each hospital and when necessary to teach standard methods to these local units.

2. To diagnose all cases which the local units would reserve for them, because they could not make the diagnoses themselves.

3. To organize a central diagnostic station to which each hospital might send either its cases which defied diagnosis, or specimens from these cases. (For instance, it would be folly for each little hospital to have a pathologist, if a central authoritative laboratory could be organized.)

If the commission said to each hospital: Go ahead and treat all cases in which you are sure of the diagnosis, and of your qualification to give adequate treatment; but do not let us find you treating cases without diagnosis or giving treatment for which your previous experience has not qualified you.

In most instances patients have diseases easy to diagnose and to treat. Show your judgment

and learning by sticking to things you can make good on. When your staff has proved it can do that for a few years, we shall need them to treat the difficult cases which other hospitals have discarded. Also let your staff spend a portion of their time every year at our diagnostic center, studying new methods, so that they can increase the range of their usefulness to you and your community.

MAIN IDEA.

At present there is enormous waste in our institutions:

1. From cases treated under wrong diagnosis.
2. From cases treated by physicians and surgeons not qualified to cure the patients even if they knew the diagnosis.

In most hospitals there is no person or group of persons whose duty it is to see whether the cases are cured, if curable, and if incurable, studied and recorded.

Book Reviews.

State Medicine (Health Insurance). By Drs. CHARLES E. MONGAN, FRANK E. BATEMAN, AND GEORGE A. MILES.

THE Sqmerville Medical Society has recently published a pamphlet entitled "State Medicine Misnamed Health Insurance," which has been compiled by the Paul Revere Committee, and is for sale for twenty-five cents. The book contains a series of papers presenting those objections that the medical profession of this State has made to health insurance as advocated by its instigators. Dr. Charles E. Mongan and Dr. Frank E. Bateman state their position in no uncertain terms. Dr. George A. Miles reviews Dr. Ferdinand Friedensburg's brochure on the "Practical Results of Workmen's Insurance in Germany," which is a statement of the evils that have sprung up from health insurance in its thirty years' trial in Germany. Dr. Miles points out the likelihood of a similar experience in this country should we institute such a system of insurance. Other selected statements follow. This pamphlet should be thoughtfully and carefully read by every physician in the Commonwealth.

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A PUBLIC HEALTH AGENT IN MASSACHUSETTS.

In line with the Massachusetts precedent of taking the lead in public health work, is the step taken by the Massachusetts Medical Society in deciding to coöperate actively with the public health movements of the State. The employment of an agent to work under the direction of the Committee on Public Health is certainly an innovation for a state medical organization, and it is to be hoped that other states may follow the example.

The movement had its beginning in the winter of 1914, when a group of physicians and social workers met in the office of Dr. Walter P. Bowers, former president of the Massachusetts Medical Society, and discussed methods of stimulating the interest of the public in health matters. This group included Dr. Bowers, Dr. Arthur B. Emmons, 2d, Mr. Henry Copley Greene

of the Massachusetts Commission for the Blind, and Miss Mary Beard of the Instructive District Nursing Association. Each member of the group was interested in a different phase of the work, but all agreed as to the need of a means of giving reliable information on medical and hygienic subjects to the public.

Dr. Bowers cited as an example of the need for intelligence and interest on the part of the lay public, the attitude of the State at large toward legislation on medical and sanitary matters. In all government matters of a general nature, the voters write to their representatives in the legislature, giving their opinions and urging a vote in accordance with their views. On the other hand, the public is silent on bills that would lower the standards of medical practice, or the annual anti-vaccination bill. The citizens who appear at the committee hearings are usually lawyers paid for their services by certain interests, misguided propagandists, and sensationalists. Against these are pitted a few public-spirited physicians who donate valuable time year after year in the same work, with no return except the inevitable hackneyed charge that they are "the paid representatives of the medical trust." If the people at large were sufficiently informed, such mischievous bills would be rejected with smiles of amusement, instead of being an annual nuisance, as well as a menace to the health of the State.

Dr. Emmons and Miss Beard were especially interested in the midwife question, and in the possibility that health centers, public health dispensaries, and out-patient service, if carried on by proper persons, might do much toward education of the public to the evils of midwifery and the importance of employing properly trained physicians. Mr. Greene had another side of the question to present, which had been impressed upon him in his work for the prevention of blindness. Mr. C. C. Carstens of the Society for the Prevention of Cruelty to Children, who joined the group, also presented his views of conditions seen in his work—but all agreed that the great remedy for these undesirable conditions was education of the people by properly qualified persons.

In the opinion of Dr. Bowers, the physicians of the State were the men fitted by training and experience for just this type of educational work. Many are, of course, already devoting a part of their time to it either in clinics, dispensaries, or special societies, or by means of pub-

lie lectures, of which the annual series presented at the Harvard Medical School and at the Evans Memorial, in Boston, are perhaps the best known examples. In addition, there are some who by virtue of an official position, such as school physician or member of the board of health spend some part of their time in educational work. The great majority, however, either through lack of interest and initiative, fear of criticism from their fellow practitioners on the grounds of "advertising," or modesty, are taking no part in the movement to improve conditions. Lack of time can hardly be considered a valid excuse since the busiest men are doing the most of this work.

It seemed that the organization which could do most to improve the existing conditions was the state medical society, which was in a position to arouse the physicians to an appreciation of the responsibility which their training and position imposes upon them. In addition, the rapidly increasing prominence of public health work and the increasing importance of the prevention of disease, as compared with its cure, together with the various moves for socialization of medicine, such as health insurance, pointed the steps of the society toward giving added attention to public health work.

Accordingly, on June 8, 1915, at the annual meeting of the society, Dr. Bowers moved that a committee be appointed by the Council "for the purpose of hiring an agent who shall, under the direction of this committee of the Massachusetts Medical Society, assist in the dissemination of information and in the carrying on of any function of the society in public health work, legislation, social service, or similar departments of effort." The motion was carried, and the president, secretary, treasurer, chairman of the Committee on Membership and Finance, and chairman of the Committee on Public Health were appointed members of the special committee. This committee met in June, 1915, but, lacking the means of employing such an agent, took no definite action at that time.

The original group of workers, having this tentative endorsement of their efforts, began the search for a suitable agent and for money to employ him. After careful consideration, the special committee of the society recommended Mr. Edward A. Ingham, of the Department of Biology and Public Health of the Massachusetts Institute of Technology. Mr. Ingham has received the certificate in public health from the

Harvard-Technology School for Health Officers, and in addition is lecturer in hygiene and sanitation in the Tufts College Medical and Dental Schools. He has made a survey of the public health work in the larger towns of Massachusetts and is otherwise well qualified by training and experience.

In June, 1916, the special committee was informed that money necessary for the salary and expenses during the first year had been raised by private subscription. On June 21 a meeting of the committee was held at the Boston Medical Library, at which Dr. Bowers was present and introduced Mr. Ingham. The committee voted as follows:

"That an agent be employed who shall assist in the dissemination of information and in the carrying on of any function of the society in public health work, legislation, social service, or similar departments of effort.

"That Edward A. Ingham be such agent.

"That the details of carrying out the plans outlined by Dr. Rosenau to the committee be entrusted to the Committee on Public Health, which shall report progress when requested to do so."

The Committee on Public Health met on September 11 and voted: "That the basis of the work to be followed by the agent, Mr. E. A. Ingham, be as follows:

"1. To stimulate the interest of the medical profession in Massachusetts in sanitation, hygiene and preventive medicine.

"2. To stimulate the cities and towns of Massachusetts to employ full-time health officers.

"3. To stimulate better work in medical inspection of schools, infant mortality, pre-natal work, district nursing, anti-tuberculosis work, industrial hygiene, sanitary engineering, and the prevention of the common communicable diseases.

"4. To investigate the health conditions of the State with reference to public health work."

In the opinion of the committee, the greatest actual value to the public health would be derived from the stimulation of the cities and towns of the State to the employment of full-time trained health officers and public health nurses. Accordingly, Mr. Ingham has devoted most of his efforts to this work up to the present time. He will be glad to have physicians of the State communicate with him in regard to places where he may be of service, and requests that each member give especial thought to health

conditions in his own city or town, and as to how they may be improved. Letters may be addressed to Mr. Ingham at 222 Charles River Road, Cambridge, Mass.

AN IMPORTANT LEGAL DECISION.

THE Supreme Judicial Court of Massachusetts, in an opinion, which appears elsewhere in this issue, deciding the case of Jacob Huxen vs. Maryland Casualty Company, seems again to narrow the interpretations of the Workingmen's Compensation Act, as far as medical services under the act are concerned.

The medical profession may well consider certain portions of this decision and the possibilities of remedial legislation. Perhaps the Industrial Accident Board should be given by law the final say as to what or what is not unusual. The evidence in this case shows conclusively its serious nature, and to the medical mind the need of continued treatment is apparent. Certainly this very type of case was in the mind of the Industrial Accident Board if the recommendation of the board, which appears on page 51 of their First Annual Report, on which the present law was based, is considered. They recommended the following:

"The Industrial Accident Board requests that the legislature give the board the power to require the payment of bills for medical and surgical treatment, medicine, medical and surgical supplies, crutches and apparatus when necessary, beyond the first two weeks after the injury, in unusual cases, where the injury is so serious as to require and warrant such additional medical treatment."

The present law follows this quite closely, but apparently, as interpreted by the court, not exactly. The recent decision also says:

"It is not in an ordinary case, requiring longer medical attendance, that the discretion of the Board may be exercised to change this attendance to the expense of the insurer. It is only in 'unusual cases' that they may do so. There should be grave doubt whether a case where the employee is able to go from his home in Cambridge to an office in Boston could be so unusual as to be within the purview of the act."

If the ability of a man to go to a doctor's office is to be a basis as to whether or not the case is unusual, what of the disabilities from fractures

of the legs and ankles, the serious results of contracted scars after burns, ununited fractures of the upper extremities, the recurring dislocations at the shoulder, or the various forms of ruptured muscles or associated bursitis, which are disabling when not treated, and which a man with a family cannot afford to pay for out of his small compensation payment?

The latter part of the decision, which passes upon the amount of the fees, is not of as much importance to the medical profession as the decision that a serious case, partly treated, can be taken from a competent man and turned over to someone selected by the insuring company. If there should be a bad result, who would be held responsible? It is not sufficient to say that the insurance company must pay for the damage in compensation. A permanent injury continues as a handicap after the compensation period has ceased, and may lead, not only to a community loss, but to a public charge.

The liberal administration of the medical aspects of the law under the Massachusetts Industrial Accident Board seems to have received a further set-back. The medical profession acted promptly after the "Pecott" decision, and they should carefully consider the bearings of this latest decision.

MEDICAL NOTES.

TWO NEW MEDICAL JOURNALS.—A previous issue of the JOURNAL announced the proposed publication of two new medical journals. Copies of the first issues are at hand. One, *Archives Médicales Belges*, published in Paris, is concerned chiefly, for the time being, with military surgery, although it is not the purpose of this journal to confine itself to that special field of medicine. It also contains a large abstract department, reviewing French, English and American medical journals. It is the sole organ of Belgian medical science in exile.

Endocrinology, which begins its existence with the January number, is published by the Association for the Study of the Internal Secretions, and is the bulletin of that association. It is an attractive volume of 128 pages, printed in large, clear type, and contains, as a useful innovation, a six-page cross index of subjects and authors. Inasmuch as more than half the space of the book is given to an extensive abstract department covering 193 articles, and as these subjects and authors are included in the index, it becomes a most important and valuable part of the journal. For a physician interested in the internal secretions, this journal will fill a long-felt want and be of the greatest possible use.

WAR RELIEF FUNDS.—On March 17 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$536,027.38
French Wounded Fund	206,297.62
Armenian Fund	163,162.17
Permanent Blind Fund	103,999.95
British Imperial Fund	91,660.35
French Orphanage Fund	86,546.91
Surgical Dressings Fund	79,496.47
Boston Ambulance Fund	46,740.56
French Blind Fund	3,411.00

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 10, 1917, the number of deaths reported was 278, against 292 for the same period last year, with a rate of 18.77, against 20.02 last year. There were 38 deaths under one year of age, against 42 last year, and 97 deaths over 60 years of age, against 88 last year.

The number of cases of principal reportable diseases were: diphtheria, 81; scarlet fever, 41; measles, 168; whooping cough, 5; typhoid fever, 2; tuberculosis, 49.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 6; tuberculosis, 8.

Total deaths from these diseases were: diphtheria, 3; typhoid fever, 1; tuberculosis, 23.

Included in the above were the following deaths of non-residents: diphtheria, 1; tuberculosis, 3.

MEN IN INDUSTRIAL MEDICINE FORM SOCIETY.

—An organization for the promotion of a mutual extension of knowledge among physicians or others interested in industrial medical work, was formed by a group of prominent Massachusetts physicians and business men at a meeting held at the Boston City Club on March 2, 1917.

"About a year ago I introduced our present plan for medical work in Cambridge," said Mr. J. W. Fellows, on opening the meeting. "In selecting the course to be followed, and to avoid the many pitfalls of error, we proceeded slowly and carefully. Industrial medical work demands far different considerations than the medicine of private practice or regular hospitals. What will the cost be? Will this particular idea be applicable to our plant, even though it has been successful in some other? What will the effect be on our labor?—these are only a few of the questions that we had to consider and discuss before any suggestion could be accepted. The articles in the medical and trade journals were of great assistance to us. But it was early seen that an organization

of men who were doing this work, and could exchange their ideas, would be of great mutual aid. Men who have studied successfully these problems could assist their brothers just entering upon the work. I would like to help other manufacturers; our plant physicians would welcome the chance to give their experience to the medical men."

Dr. Woodward, the president of the Massachusetts Medical Society, was present at the meeting. Dr. Woodward is fully cognizant of the success in factory sanitation and medical betterment work by the profession.

To prevent accidents and to treat them adequately when they do occur, to watch over the health and sanitary conditions of the plant, require the careful thought of the plant medical director. Most small towns have a health officer. Factories from a few hundreds to several thousands, numbers that equal a town or small city, need medical assistance to keep their force up to its highest efficiency.

It is intended to have no definite organization for this society, but to invite all who are interested in the work. Such a loose organization will, then, demand no officers nor the election of new members. Dr. W. I. Clark, Jr., of Worcester, was nominated secretary and asked to arrange for future conferences. In order to extend further the influence and activities of the organization among manufacturers, a committee was appointed, to consist of Mr. Fellows, Mr. McSweeney, and Mr. Alexander.

HOSPITAL BEQUEST.—By the will of the late ex-Mayor Edward Glines of Somerville, the Somerville Hospital receives a bequest of \$10,000.

Obituary.

ROBERT ALEXANDER DOUGLAS-LITHGOW, M.D.

ROBERT ALEXANDER DOUGLAS-LITHGOW, a descendant of two of the oldest Scottish families, the Douglas and the Linlithgow, died at the Massachusetts General Hospital on March 2d from the effects of a severe fall received some weeks ago. Dr. Douglas-Lithgow was born at Belfast, Ire., where members of the family had settled in 1660. His early education was obtained at the well-known school of Down, Cornor and Dunmore. He then entered Queen's College, Belfast, from which he graduated. Later he graduated from Edinburgh University and St. Andrew's, Scotland, and was a member of the council for the last-named university. He was for some time a student at Guy's Hospital, London, and achieved further skill in the medical profession

as assistant to some of the largest practitioners in England. He established himself in London and built up a large and important practice.

Dr. Douglas-Lithgow was almost as well known in the literary world as in the world of medicine. He was for many years a great literary student, writing a number of well-known papers of great value on Shakespeare. At twenty years of age he dedicated a volume of poems, by permission, to Lord Tennyson, considered as a rare distinction on the part of the famous poet laureate. Dr. Douglas-Lithgow's essays written on the poets from Chaucer to Wordsworth are notable in English literature. They were published by the Royal Society of Literature of which, at that time, Lord Halsbury was president and Dr. Douglas-Lithgow was vice-president and foreign secretary.

In 1900 he came to this country, where he became generally interested in study of the American Indians and the names they had left as heritage. He compiled a valuable collection of all the Indian places and proper names in New England, which was published in 1911. He was also the author of "Nantucket, a History," published in 1914. He was a retired member of the Massachusetts Medical Society.

Dr. Douglas-Lithgow knew many well known literary persons and among his friends were Robert Browning, Lord Houghton, Barry Cornwall, Charles Dickens, Lord Tennyson, Eliza Cook and the Duke of Argyll.

Soon after coming to this country his wife died. He married again and is survived by his second wife and a son.

HENRY DWIGHT HOLTON, M.D.

DR. HENRY DWIGHT HOLTON, one of the leading physicians of Vermont, died at his home in Brattleboro, Vt., on February 12. Dr. Holton was born in Rockingham, Vt., July 24, 1838, and received his early education at Vermont Academy. He then went to Boston, where he studied under Dr. J. H. Warren; to New York, where he studied under Dr. Valentine Mott, and entered the University of New York. He received his degree of M.D. from this university in 1860. In 1867 he settled in Brattleboro, and began a practice that was to continue with honor and distinction for over fifty years. In that year he was made president of the Connecticut River Medical Association, and in 1873 he was elected president of the Vermont Medical Association. He was also appointed to the chair of materia medica and general pathology in the medical department of the University of Vermont, which position he held for thirteen years. During this time the enrollment of students had increased from 40 to 260. He was appointed a trustee of the University and of the State Agricultural College, offices he held for eighteen years. He served nine years as treasurer of the American Public Health Association, and was its president

in 1902. As an active force in the organization of the pan-American medical congress, he was chairman of the board of trustees and executive committee. He was a member of the American Medical Association and of many other medical societies, including membership in the British Medical Association.

For twelve years he was secretary of the state board of health, having been instrumental in its establishment and having been a member of its board for many years. He also held many positions of local prominence, and was at one time member of the Vermont Senate. There were few activities of a public nature, not only in his own town and community, but in the state at large, that did not feel his influence and were not benefactors of his able services. He is survived by two grandchildren.

JOE VINCENT MEIGS, M.D.

DR. JOE VINCENT MEIGS, a leading physician and surgeon of Lowell, Mass., died in that city of cerebral hemorrhage on March 9. Dr. Meigs was born in Lowell on January 22, 1867, and received his early education in that city. He was graduated from the Jefferson Medical College, Philadelphia, in 1889, and in that year established himself in practice in his native city, where he continued up to the time of his death to gain for himself distinction as a practitioner of merit, and devotion from a wide circle of appreciative patients. He served for several years as associate medical examiner of the Fifth Middlesex District, and on the death of Dr. John C. Irish, in 1898, he succeeded him in the position of medical examiner, which position he held at the time of his death. He was on the staff of the Lowell General, St. John's, and the Lowell Corporation Hospitals, was a member of the American Medical Association, the Massachusetts Medico-Legal Society, and the Massachusetts Society of Examining Physicians. He was president of the Middlesex North District Medical Society, and a vice-president of the Massachusetts Medical Society. For several years past, Dr. Meigs has been president of the Yorick Club. He was also member of the Vesper Country Club.

Dr. Meigs was in great demand both as a surgeon and as a consultant, and his untiring devotion to his large practice was a matter of concern to his friends, who saw in his ceaseless activity a danger to his health and powers. That he preferred to devote his life to busy service rather than to limit his energies, even though it might entail serious consequences, is significant of his attitude throughout his life toward his profession, and is the explanation of the high esteem and loyalty with which he is regarded by the community in which he lived. His city and his profession have lost a worthy and beloved member.

Miscellany.

WORKINGMEN'S COMPENSATION ACT.

Industrial Accident Board,
Boston, Massachusetts.

FINDING AND DECISION OF THE INDUSTRIAL ACCIDENT
BOARD AS TO REASONABLENESS OF PHYSICIAN'S
BILL.

JACOB J. HUXEN	Employee
J. T. SCULLY FOUNDATION COMPANY	Employer
MARYLAND CASUALTY COMPANY	Insurer
G. W. MORSE, M.D.	Physician

The evidence in the above case was heard by the Chairman of the Board at a hearing held at the rooms of the Industrial Accident Board, 1 Beacon Street, Boston, Massachusetts, on Wednesday, April 26, 1916, and reported to the full Board for finding and decision.

The employee received an injury in the course of and arising out of his employment on October 28, 1915. The Maryland Casualty Company was the insurer of his employer.

The insurer contested the reasonableness of the bill, and, furthermore, contended that the patient should have been turned over to Dr. Chase, its own physician, after Dr. Morse had rendered first-aid treatment.

DR. GEORGE W. MORSE, 30 Pinckney Street, Boston, testified that he was called to attend employee on October 26, by Mr. Monahan, and found him suffering with a burn from live steam; the upper part of his body, which was exposed, was burned. He treated the employee on the job and considered it a serious enough case to be sent to the hospital, but employee refused to go to the hospital. Employee went home and wanted the doctor to take care of him, which he did. He visited employee October 28, 29, 30, November 1, 3, 4, 5, 6, 8 and 10 at his home in Cambridge. After November 12 employee came to the doctor's office in Boston 21 times and the doctor charged \$2 a visit. Nothing has been paid in this case. For the first-aid visit he charged \$10 and for the visits to employee's home in Cambridge charged \$3. The visits to the house were not simple ones, as employee had to be stripped to the waist and had to be completely covered with dressings; he had a second degree burn over the shoulder. The dressing smelled very badly after a while and had to be changed and it was quite a job to put on this dressing and for what he had to use he thought it was a perfectly reasonable charge. It was a very serious case. When employee came to his office he had to bandage around the chest and shoulder and clean the area of granulation. There was the back area in which there was proud-flesh and this had to be cleaned off. Has never treated any cases from the Maryland Casualty Company before, that he remembers. He did not know anything about the arrangement which the insurer had with the New England Equitable Insurance Company with regard to treatment on that job. He made no attempt to get into communication with either the J. T. Scully Foundation Company or the Maryland Casualty Company before continuing with the treatment.

FRANCIS H. MONAHAN testified that, at the time of the accident, he was in charge of the first-aid department at the new Technology building in Cam-

bridge, where the accident occurred, for the New England Equitable Insurance Company, for which the Stone & Webster Engineering Corporation had the contract. The employees of the sub-contractors were also treated in the first-aid department through an arrangement of their insurers with the New England Equitable Insurance Company. The arrangement with the Maryland Casualty Company was that he, Mr. Monahan, should give first-aid treatment, then turn the cases over to Dr. Chase of Cambridge, the physician for the Maryland Casualty Company. In the case of Mr. Huxen he felt that it was beyond him to give any treatment and therefore called up Dr. Chase at once. Not finding Dr. Chase in, he called Dr. Morse, the physician for the New England Equitable Insurance Company and under the arrangement between the insurers and the sub-contractors and the New England Equitable Insurance Company reported the injury immediately to the New England Equitable Insurance Company. Dr. Morse arrived within twenty minutes after the accident and rendered first-aid treatment.

JACOB J. HUXEN, the employee, testified that his wages were 75 cents an hour.

The insurer introduced in evidence the following letter written to the employee on December 16, 1915:

December 16, 1915.

17882 T. Comp. 24309
J. T. Scully Found. Co.

Huxen.

Mr. Jacob J. Huxen,
846 Main Street,
Cambridge, Mass.

Dear sir:—

Regarding your medical attention, we think it advisable for you to call on our Dr. D. E. Chase, 1619 Massachusetts Ave., Cambridge, where you will receive first-class treatment free of charge. But if you wish to continue with Dr. Morse, we will allow him \$1.00 an office visit.

Very truly yours
(Signed) E. I. TAYLOR.

Dr. Morse testified that the employee showed him this letter and that he continued to treat him. The insurer also introduced in evidence a bill sent to it by Dr. Morse under date of December 10, in the amount of \$30 for visits to the employee of October 28, 29, 30, November 1, 2, 4, 5, 6, 8 and 10. Dr. Morse testified that if this bill had been paid at the time submitted, he would have accepted it in full payment of all charges up to November 10, but apparently he had forgotten to make any charge for first-aid treatment on the bill. He is now claiming payment for treatment to the amount of \$80.

Dr. Morse's charges were as follows:

First-aid treatment, October 28, 1915, \$10; visits to Cambridge, October 29, 30, November 1, 2, 4, 5, 6, 8, and 10 at \$3 each, \$27; this bill of \$37 covered the first fourteen days after the injury. After the first two weeks after the injury, his charges were as follows: Visit to Cambridge, November 12, \$3; office visits and dressings, November 15, 17, 19, 25, 27, 29, December 2, 4, 7, 9, 11, 14, 16, 18, 23, 27, 31, 1915, and January 6, 11, and 20, 1916, a total of 20 visits, \$40.

The Industrial Accident Board find upon the evidence that there is due the physician in this case

from the insurer the amount of \$80 as per the physician's claim.

The Board find that because of the nature of the injury in this case it is an unusual case and the physician is entitled to recover not only for his services during the first two weeks after the injury, but for treatment rendered beyond the first two weeks. Although the accident was promptly reported, no offer of treatment was made by the insurer until its letter to the employee under date of December 16, 1915, and that that offer was merely a suggestion to the employee that he call on their physician, Dr. Chase, but stated that if he wished to continue with Dr. Morse they would allow Dr. Morse \$1. a visit.

We find under the circumstances that Dr. Morse was justified in continuing with the case, that his treatment was necessary and that his charges are reasonable.

(Signed) FRANK J. DONAHUE, *Chairman*.
DUDLEY H. HOLMAN
DAVID T. DICKINSON
JOSEPH A. PARKS
THOMAS F. BOYLE

SPECIAL BOARD 1582.

JACOB HUXEN	<i>Employee</i>
J. T. SCULLY FOUNDATION COMPANY	<i>Employer</i>
MARYLAND CASUALTY COMPANY	<i>Insurer</i>
G. W. MORSE, M.D.	<i>Physician</i>

DECREE OF SUPREME JUDICIAL COURT ON APPEAL.

RUGG, C. J. The only questions raised by this appeal relate to the obligation of an insurer under the Workmen's Compensation Act to pay the fees of a physician to an injured employee. The first point to be decided is whether the physician can be a party to a proceeding under the Act. It is provided by St. 1911, c. 751, Part iii, s. 13, as amended by St. 1914, c. 708, s. 12, that "Fees of attorneys and physicians and charges of hospitals for services under this act shall be subject to the approval of the Industrial Accident Board. If the association and any physician or hospital, or the employee and any attorney, fail to reach an agreement as to the amount to be paid for such services, either party may notify the Board, which may thereupon call for the formation of a committee of arbitration in accordance with the provisions of this act, and all proceedings thereunder shall be in accordance with the provisions of this act." It was held in Panusuk's case, 217 Mass. 589, that the questions relating to services of physicians were proper for consideration under the Act, although it was raised by the employee and not the physician. But since the fees are to be fixed by a committee of arbitration in case of disagreement, it seems to follow necessarily from the terms of the Act, that, where the physician is the party interested in that matter, he may be a party to the proceedings.

It is not contended that Dr. Morse was not called rightly to attend the injured employee and is entitled to recover for the two-week period following the injury when under the Act the insurer is bound to provide medical attendance. The controversy arises as to the attendance subsequent to the expiration of that period.

The services of the physician were rendered under these circumstances: The employee was injured by being burned with live steam. Dr. Morse was the physician employed by another insurance company

which insured other subscribers performing work on the Technology buildings, where the injury occurred, and does not appear to have been the regular physician of the employee. He thought, on examination, that the employee should go to the hospital, but the employee refused, and the physician, at his request, treated him at his home for a period of two weeks. After the expiration of that period he was able to go from his home to the doctor's office and was treated there. The entire evidence about the kind of treatment after the expiration of the two-week period is this, from the physician: "When the employee came to his office he had to bandage around the chest and shoulder and clean the area of granulation. There was the back area in which there was proud-flesh, and this had to be cleaned off." The question is whether this constitutes an unusual case within the meaning of the first sentence of St. 1914, c. 708, s. 1, amending Part ii, s. 5 of the Act so as to read as follows: "During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the Board, for a longer period, the association shall furnish reasonable medical and hospital services and medicines, when they are needed." It is manifest that the Legislature did not intend to impose all expenses of medical attendance upon the insurer. The obligation to provide such attendance as an absolute duty is confined to two weeks after the injury. It is manifest that in the aggregate there must be many cases where medical attendance may be required for a longer period. It is not in an ordinary case requiring longer medical attendance that the discretion of the Board may be exercised to charge this attendance to the expense of the insurer. It is only in "unusual cases" that they may do so. There would be grave doubt whether a case where the employee is able to go from his home in Cambridge to an office in Boston could be so unusual as to be within the purview of the Act. But there is a further circumstance in the case at bar which renders it impossible to say as matter of law that the finding of the Board was unwarranted. After there had been several treatments at the doctor's office in Boston, the insurer wrote the employee as follows: "Regarding your medical attention, we think it advisable for you to call on our Dr. D. E. Chase, 1619 Massachusetts Ave., Cambridge, where you will receive first-class treatment free of charge. But if you wish to continue with Dr. Morse, we will allow him \$1. an office visit." There is here no intimation that the attendance of some physician was not required under the Act. The offer to pay one dollar per visit to Dr. Morse, or to provide its own physician free of charge, may have been found to be an admission that under the Act the insurer was bound to furnish medical attendance, and hence that it was an "unusual" case. As the finding of the Board must stand if there is any evidence on which is might reasonably have been founded, it cannot be pronounced unwarranted.

The letter from the insurer to the employee was shown by the latter to Dr. Morse, who continued to treat him. It is manifest that, after this letter was shown to him, he knew that attitude of the person whom it is now sought to hold liable for his services. There is no intimation that Dr. Chase, the physician proffered by the insurer free of charge to the employee, was not competent and a proper person to

treat the employee. The fact that the employee was able to go to the office for treatment makes it plain that the case was no longer critical. It was not then a case of emergency. Under the conditions here disclosed there is no "other justifiable cause" for the continued attendance of Dr. Morse after December 16, the date of the letter from the insurer to the employee. If he chose to continue to treat the employee at the expense of the insurer under these circumstances, he must do so on the terms offered. The Act, by the latter part of St. 1914, c. 708, s. 1, does not place the fees of a physician under the control of the Industrial Accident Board when there is no emergency, when there appears to be no reason why the physician provided by the insurer may not render the necessary service efficiently and satisfactorily, and when the physician who is making the claim knows of the terms upon which alone the insurer is willing to be responsible to him and he continues thereafter to render the service.

The decree is to be modified by striking out the narration and adjudication as to the letter of December 16, 1915, and by reducing the amount due to Dr. Morse to \$75, and as thus modified is affirmed.

So ordered.

Correspondence.

THE YOUNG BILL.

Somerville, March 7, 1917.

Mr. Editor:—It looks to me as though the JOURNAL was doing all it could to advance the "Young" bill without coming out openly in its favor. The editorials of February first and March first might serve as an address advocating it, but I should not be in the least surprised to be told that they had been written, by either Prof. Doten, or Dr. Rubinow, or Mr. Michael Davis. I have heard all three speak in advocacy of what they call "health insurance." It is the same paternalistic German theme or scheme, treated in the same way.

Now, at the special meeting of the Council held Dec. 20, 1916, a certain resolution was unanimously adopted, to the effect that "We, the Council of the Massachusetts Medical Society, assembled in meeting for the purpose of considering health insurance, most respectfully request that no definite plan on health insurance, or recommendation in regard to health insurance, be submitted to the Legislature until a further knowledge of the proposed laws be spread among the citizens of the Commonwealth."

The two medical sponsors for the "Young" bill are Dr. Wade Wright of the Massachusetts General Hospital who is *not* a member of the Massachusetts Medical Society, and Dr. Roger I. Lee of the Massachusetts General Hospital, and a consulting editor of the Boston Medical and Surgical Journal, who is a member of the Massachusetts Medical Society, and in the Middlesex South District.

In February a very numerous attended meeting of the Middlesex South District unanimously put itself on record as opposed to the "Young" bill.

Has Dr. Roger Lee paid any regard to the resolution of the Council or to the recorded opposition of the members of the Middlesex South District?

He boldly advocates the "Young" bill with its insidious, pernicious and tyrannical medical provisions!

And this, at the greatest crisis in our country's history, when our every effort and thought should be to our country's needs!

FRANK E. BATEMAN, M.D.

NOTICES.

THE COMMONWEALTH OF MASSACHUSETTS.

COMMITTEE ON PUBLIC SAFETY, STATE HOUSE, BOSTON.
—Doctors, dentists and veterinarians are needed in the Medical Department of the Reserve Corps. Application blanks on examination for admission to the Reserve Corps and information as to the requirements of each of the branches of the service named may be obtained by application to this committee.

CHARLES H. COLE,
Chairman, Committee on Land Forces.

BOSTON MEDICAL SCHOOLS BEGIN TRAINING IN MILITARY MEDICINE.—The medical schools of Harvard University, Tufts College and Boston University have united in a movement to give instruction in military medicine. This is part of a general

movement on the part of the medical schools of the country to prepare their students so that they may serve as medical officers in the army or navy. A meeting of representatives of the leading medical schools was held in Washington, January 6, 1917, at which it was agreed that such instruction ought to be given as a measure of medical preparedness for war, and the cooperation of the Medical Department of the Army and of the Navy was sought in furnishing instructors for such courses.

Lieutenant-Colonel W. P. Chamberlain of the Medical Corps of the Army, and Surgeon G. F. Freeman of the Medical Corps of the Navy, have been delegated to give this instruction in Boston. Representatives of the three medical schools met and agreed to have joint lectures for the upper classes of the three schools, in order to complete the course in the short time remaining before graduation. Lectures will begin next Wednesday and will be held on Mondays, Wednesdays and Fridays, at 4.30 p.m., at the Harvard Medical School.

Beginning March 27, and continuing on Tuesday and Thursday afternoons, at 4.30, Colonel Chamberlain will also give a similar course of lectures for graduates in medicine. These lectures are designed primarily for members of the Medical Reserve Corps, but are open to any members of the medical profession who desire to enter the Medical Reserve Corps, or are interested in preparing themselves for service in the event of war. This course is given under the auspices of the Harvard Graduate School of Medicine, and is open to the profession without charge. Physicians wishing to take this course should apply to the Secretary of the Harvard Graduate School of Medicine, Longwood Avenue, for enrollment.

SOCIETY NOTICES.

THE CHILDREN'S HOSPITAL, BOSTON.—A clinical meeting will be held at the Children's Hospital on Friday, March 23, 1917.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-eighth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, March 30, 1917, at 8.15 p.m.

The following papers will be read:—

1. "Studies in Infant Feeding: The Mineral Constituents of Milk." Henry I. Bowditch, M.D., and Alfred W. Bosworth, Boston.
2. "Anemia in the Newborn." Karlton G. Percy, M.D., Boston.
3. "Nephritis in Childhood, with Especial Reference to Functional Tests." Lewis W. Hill, M.D., Boston.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*.
RICHARD M. SMITH, M.D., *Secretary*.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at the New England Hospital for Women and Children, Dimock Street, Roxbury, Tuesday, March 27, at 4 p.m.

Inspection of buildings and hospital equipment at 4 p.m. Business meeting and papers at 4.45 p.m. A ten-minute paper will be presented from each department.

A Brief History of the Hospital, Mrs. Alice B. Crosby, Secretary of Board of Directors; The Surgical Treatment of Dysmenorrhea, Emma B. Culbertson, M.D.; The Value of Hospital Treatment of Pneumonia in Children, Sara A. Bond, M.D.; Report of Wassermann Tests on blood from Umbilical Cord in One Thousand Cases, Hannah G. Myrick, M.D.; Use of Adult Human Blood in the Treatment of Hemorrhage in the Newborn, Marion Nite, M.D.; Technique of Infant Feeding, Edith Hale Swift, M.D.

Annual meeting, Tuesday, May 8. The Censors will meet, Thursday, May 10, at 2 p.m., for the examination of candidates. BRADFORD KENT, M.D., *Secretary*.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

March 29, 1917

NEW ENGLAND SURGICAL SOCIETY

THE CARE OF THE AMBULATORY ACCIDENT CASE. By H. G. Stetson, M.D., Greenfield, Mass.	447
PAIN IN THE RIGHT LOWER QUADRANT. By William Warren Townsend, M.D., Rutland, Vt.	450
TUMORS OF THE SPINE AND CORD. By William Jason Minter, M.D., Boston.	452

ORIGINAL ARTICLES

GASTRIC ULCER PRODUCED BY INTRAVENOUS INJECTION OF STAPHYLOCOCCUS PYOGENES. By Edgar C. Steinharter, B.S., M.D., Cincinnati, Ohio.	401
REMARKS ON THE DIAGNOSIS AND TREATMENT OF GASTRIC ULCER. By Louis Fischbein, M.D., Boston.	405
PREPARATION OF VEGETABLE PROTEINS FOR ANAPHYLACTIC TESTS. By R. P. Wodehouse, Boston, and J. M. D. Olmsted, Boston	407
AN IMPROVED BLOOD TRANSFUSION TUBE. By William Reid Morrison, M.D., Boston.	408

BOOK REVIEWS

THE MEDICAL CLINICS OF CHICAGO.	470
PUBLIC HEALTH NURSING. By Mary Sewall Gardner, R.N.	470

EDITORIALS

THE FOOD VALUE OF MILK.	471
MEDICAL PHASES OF THE NEW IMMIGRATION LAW.	472
THYMUS DEATH.	473
MEDICAL NOTES.	473

HARVARD MEDICAL SCHOOL

FELLOWSHIPS IN PREVENTIVE MEDICINE.	476
THE CUTLER LECTURES.	476

CORRESPONDENCE

THE YOUNG BILL: A SECOND REJOINER. George E. Whitehall, M.D.	476
NATIONAL BOARD OF MEDICAL EXAMINERS. J. S. Rodman, M.D.	477
"SISTER" MEANING "NURSE." Alfred Ela.	477

MISCELLANY

NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.	478
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New England Surgical Society.

THE CARE OF THE AMBULATORY ACCIDENT CASE.*

By H. G. STETSON, M.D., GREENFIELD, MASS.

For a number of years I have had much to do with emergency accident work, as seen in both office and hospital service, and since July 1, 1912, when the Workmen's Compensation Law of Massachusetts became effective, this work has very much increased. It is because of this extended experience that I chose to bring this subject to your attention, and I trust that it may prove the seed from which something will grow in the way of discussion that will prove of value. Nothing new is offered, I am sure, in the consideration of this subject, either in the management of the cases, or in the treatment of the various conditions of injury which arise. There are some observations which I would make, however, which to me have seemed somewhat important and not perhaps sufficiently appreciated by some of those who are called upon to care for this class of surgical work. If one is to be successful in the management of this particular kind of work he must be willing to make many sacrifices, for his most cherished plans will be completely disregarded times without number:—he must be reasonably prompt in rendering service, the injured person may be content to wait a reasonable length of time, but his friends and co-workers will never listen to delay; he should be able to

obtain and keep fairly accurate histories, for many times upon this depends the payment of the amount of compensation; he should have reasonably good business ability and system, and should take particular pains to forward promptly his reports of accidents and his bills for services rendered. That he should have tact and good surgical judgment goes without saying. Experience is, of course, a very essential factor in the proper handling of the accident case, and placing it at the bottom of the list of desirable qualities specified, does not in any degree minimize its importance, but rather tends to lay especial emphasis upon its necessity.

Probably there is no quality possessed by the accident surgeon which is of so much importance as this in getting the injured man back to his work in the shortest possible time and in the best possible condition.

The surgeon's duty, therefore, is two-fold: first the duty to the injured man, who should be guaranteed the best possible service both in promptness and in skill, in order that his return to health may be brought about in the shortest possible time; second, to the employer, in promptly notifying him of the extent of injury, of the probable duration of the disability, and, by no means of least importance, of the manner in which the injury was produced, in language as clear, plain and concise as possible. This report, promptly received by the employer, can at once be forwarded to his insurance company. Prompt handling of such reports by the attending surgeon insures a minimum amount of delay in determining and forwarding compensation, if such should have to be paid. For the past two years we have provided accident

* Read at the inaugural meeting of the New England Surgical Society, Boston, Oct. 6, 1916

reports as part of our own stationery, and this is filled out at the time the patient is first seen, and forwarded to the patient's employer, usually upon the same day that the employee is first seen. At the same time we make out a card for our own use, and upon this card we endeavor to keep a clinical history of the case until it is discharged. Fifteen days after the date of injury, a bill is sent to the employer for all services rendered the employee during the first two weeks or fraction thereof of his disability. To employers of labor not availing themselves of the benefits of the Workmen's Compensation Act, the Boston & Maine R.R., for instance, statements for services rendered injured employees are rendered on the fifteenth of the month following the discharge of such patient. Should any unexpected complication arise during the period of disability of an employee, or should the period of disability prove to be longer than was at first anticipated, a statement of such complication or prolonged period of disability is often sent to the employer, not only that he may personally know the condition of his employee, but he may also, if he so desires, convey this information to the company who insures him, for their guidance.

All this, of course, requires some clerical work, but we must remember that the present laws also require greatly increased clerical expense upon the part of the employer, and unless information relating to accidents occurring in his plant is promptly reported, he is subject to a heavy fine, in addition to jeopardizing the benefits derived from his insurance. It, therefore, behooves the surgeon who wishes to do accident and emergency work, to render prompt and efficient service to the employer as well as to the employee. So far as possible, all accident cases are cared for at the office, both for the primary treatment and for the later dressings. We dislike to attempt any treatment at the place of injury, and if patients can be moved, they are brought to our office, or if the injury is of a severe character, they are sent at once to one of the local hospitals. We feel that the results of this method are superior to anything that we would be able to obtain in treatment at place of injury. Injuries requiring an anesthetic and any extended repair work are treated primarily at the local hospital, but they are discharged at the earliest possible moment that this can be safely done. To keep a patient with a minor injury of his hand, for instance, in a hospital, is nonsense, and not likely to endear the doctor either to patient or employer.

In the primary treatment of minor wounds we are about equally divided in practice between two methods. The first method consists in a thorough cleansing of the surrounding parts of the wound, followed by a cleansing of the wound itself with tr. of green soap and water. This is followed by the application to the wound of a solution of bichloride of mercury of a strength

of 1-2000, completely immersing the wound in the solution if possible. Either a dry sterile dressing or a moist borax and lavender dressing is then applied. The second method consists in the application of 3½% tr. of iodine directly to the wound and to the surrounding parts, followed by a dry sterile dressing, no attempt being made to cleanse the parts. My own personal results would lead me to favor the primary cleansing with green soap and water, followed by the bichloride solution, although we have obtained very satisfactory results with the iodine method.

We are in the habit of changing dressings as infrequently as possible, and perhaps sometimes we carry this too far. We are very fond of the moist or wet dressings in the treatment of the ordinary lacerated minor wounds of the hand and fingers, and particularly so, of the old Gangees solution of borax, co. tincture of lavender, glycerine and water, sometimes known as borax and lavender mixture. Patients with this form of dressing seldom have redressings oftener than once in two days, and often once in three days. Very often when the dressing becomes very adherent to a granulating surface, we cut around the adherent portion, allowing it to remain, serving as an improvised scab. It is often surprising to see the rapidity with which healing goes on beneath this makeshift. It is, I am sure, superior to tearing off surface granulations every day for the simple purpose of putting on a new dry piece of gauze. This, of course, can be done only in the so-called clean wounds.

Nearly all infected and suppurating wounds are treated with a wet creolin solution. This dressing should always be thicker than the average dressing, and nearly always should be covered with some impervious material such as oil silk or rubber tissue. These dressings almost invariably have to be changed daily. As soon as the wound becomes clean and granulations begin, creolin is discontinued, and the Gangees solution or a dry sterile dressing is used. In a few dirty suppurating wounds we have lately used Dakin's solution with very pleasing results, notably so in a dirty gunshot wound of the foot.

In those wounds resulting in a fairly definite cutting off of portions of the phalanges, we have done no re-amputating for some years, always relying upon a thick dressing constantly moist with Gangees solution. It usually requires from four to five weeks for the end of a chopped-off finger to become completely covered in with epithelium, but the result, so far as function is concerned, seems to be perfectly satisfactory—the stump being no more tender than if covered with a palmar flap. By so treating these injuries, from one-half to three-quarters of an inch of finger is saved, and this is very important indeed.

Incised and lacerated wounds we close up as much as possible, often using horsehair for

this purpose, and usually this is done without an anesthetic. Much can be done in this way without serious complaint on the part of the patient, provided one uses the finest possible needle and horsehair; and certainly the patient's feelings should be considered.

In the treatment of superficial burns we have obtained very much better results by removing all the loose rolled-up epithelium at the primary dressing; even the blisters are trimmed off at their base. It has been our experience that the serum which collects beneath this layer of loosened epithelium nearly always becomes infected, and it is then necessary to remove it. To remove it early lessens the danger of infection and hastens recovery. In the superficial burns we have always found Gamgees solution as comfortable and as clean as anything. Sometimes just before burned areas become completely covered with epithelium, the borax-lavender mixture becomes very irritating; it must then be very much diluted with salt solution or perhaps discontinued entirely. In these cases some bland ointment for a few days seems to be most gratifying.

In all cases in which there is any question as to bone or joint injury, and in all cases of unmistakable fracture, radiographs are taken and the plates preserved. It has been our intention for the past two or three years to have a radiograph taken of every bone injury at the time the patient is discharged from our care as recovered, and also whenever a patient with a fracture is transferred from our care to that of another surgeon. This is done as a protection to ourselves, and we would most heartily commend it to all who have anything to do with fractures. We do not intend to undertake the care of a fracture without a very definite understanding that it shall remain under our care until its final and complete recovery. We do not think that any surgeon is justified in adopting any other course unless he is able and fortunate enough to refer the case to some one of known competency.

The proper treatment of fractures requires more careful, painstaking work than almost any other type of accident, and it carries with it greater danger to the reputation of the surgeon than almost anything else that he does. We are constantly impressed with the fact that the profession in general have not a proper appreciation of the seriousness and importance of these unfortunate accidents, and this is due, without any question, to the lack of sufficient training in the subject in most of our medical schools. It is a gratifying sight that so much space in our medical journals of the present day is given over to the subject of fractures, very much more than five years ago, and it would seem as though the subject were attaining the importance that it really deserves.

As stated in the beginning, these are observations which have been impressed upon us by our own experience, and are so given to you. Personally, I am particularly impressed with the

necessity of good and prompt business methods in dealing with this class of work. I feel that the profession are blamed many times, and justly so, for their failure to realize this. The statement that "the doctor is an awfully poor business man" is all too commonly heard. We should emphatically contradict this by adopting better business methods and by greater promptness in our relations with employers of labor.

DISCUSSION OF DR. STETSON'S PAPER.

DR. CHANNING C. SIMMONS: Dr. Truesdale has kindly asked me to discuss Dr. Stetson's paper. While I consider the Workmen's Compensation Act is very important in its relation to the physician, I do not think that the average surgeon in Boston sees many of these cases. Most go to the larger hospitals, and I will try to tell you how they are handled at the Massachusetts General Hospital.

Since the establishment of the Haymarket Relief Station there are on the average five thousand cases a year treated in the Accident Room, of which there are from none to nine industrial accident cases a day. In the month of August, for example, there were 89 industrial accident cases treated. These cases varied from a slight bruise to a compound fracture of the skull, but most were ambulatory and the injuries comparatively slight. A brief history is obtained in every case, which is important for both the hospital and the insurance company. The name, occupation, place and time of injury, and disposal of the cases is also noted. The blank filled out is very similar to the card Dr. Stetson has passed around. The employer is notified at once. The case is treated in the Out-Patient Department for two weeks and the number of visits noted. At the end of that time a bill is sent to the insurance company, at the rate of \$5.00 for the first treatment and \$1.00 each for subsequent visits. After this the patient is treated as an ordinary charity case.

If the case is admitted to the wards with, for example, a fractured thigh, a bill is sent at the end of two weeks and a second one later. The insurance companies always refuse to pay this second bill, and the case is brought before the Board, who up to now have always upheld the hospital.

The method of cleaning the wounds depends on the type, and there is no rule. A mechanic, whose hands are very dirty, has the part shaved, scrubbed with soap and water and chlorinated soda, and the wound doused out with a weak solution of iodine. Silkworm gut and horsehair are the suture materials commonly used. In small incised wounds the part is shaved, dry, the wound and skin painted with iodine, and the wound closed. Iodine and alcohol, 70%, are used extensively, but bichloride of mercury is used less and less each year.

An x-ray is taken of all fractures or suspected fractures and a second x-ray after reduction. This second x-ray I consider of more value than the first, as it enables the surgeon to be sure of good reduction. An anesthetic is always given to reduce a fracture.

We have some trouble with cases that have been treated for two weeks by unscrupulous physicians for the fee, and then sent to the hospital. It is hard to explain to these patients at times why the result of a Colles' fracture is so poor.

The insurance companies often try to get the hospital to give opinions and act as experts, but we have consistently refused. Cases that cannot be settled are at times sent to the hospital by the Board for an impartial opinion. These cases are seen by the heads of the various departments and a written report made. A fee of \$5.00 is charged. I have seen several cases in this way, and with few exceptions they have been malingerers. Dr. Cotton says that malingering is not common, and is seen only in old people and foreigners, as young men are glad to get back to their work and make more money.

PAIN IN THE RIGHT LOWER QUADRANT.*

BY WILLIAM WARREN TOWNSEND, M.D.,
RUTLAND, VT.

ALL general and abdominal surgeons appreciate thoroughly the significance of pain in the right lower quadrant of the abdomen, and this is likewise true especially of those of us who devote special attention to surgery of the genitourinary tract. It is not uncommon, after we have operated on patients for the relief of painful conditions in this location and have made possible to them the resumption of normal activity, to note a recurrence of the former pain, oftentimes in increased severity. It is this class of cases that we wish to mention briefly, in the hope of eliciting a discussion which will call to light enough data to uphold our contention that this subject is a most important one.

Pain in the region under discussion should be considered from a two-fold viewpoint. Much of what belongs under abdominal pain proceeds from the superficial, or protective structures which are common to the entire abdomen, and include the skin, cellular tissues, muscles and parietal peritoneum. Painful conditions like erysipelas, phlegmon, neuralgias, painful neoplasms, etc.; may occur, at least in theory, in any region of the abdomen and are none of them peculiar to the right lower quadrant. The same is true of subjective or hysterical pains. Before proceeding to the practical part of our paper we may quote a little from Behan's work on pain. Hyperesthesia and hyperalgesia are of little value in localizing the source of pain. Spontaneous pain must be carefully distinguished from pressure pain, which is practically synonymous with tenderness. Pressure may cause or aggravate tenderness. The pressure excited may be superficial, ordinary or deep. While spontaneous and pressure pain tend to coincide, numerous departures are known, as in gall-stone disease in which, while tenderness is felt directly in the gall-bladder, spontaneous pain is felt at the angle of the scapula. Pressure pain is usually associated with rigidity of the subjacent muscles.

Spontaneous pain may be subjective or objective. The former is generally termed psychogenic, which term includes hysterical neurasthenic, habit and occupation pains. Objective pain may be due to organic or functional causes. The former class is represented chiefly by inflammatory pain and various complicated conditions in which pain is felt at localities remote from the lesion, as a result of the complexity of nerve distribution and anastomosis. Pain in an affected structure may be associated with pain in a remote locality. Pain in hip joint disease is referred to the knee. After amputation stump-pain may be felt in an imaginary leg. When one kidney is diseased pain may be felt in its fellow. Concrete facts like the preceding have long been known, but when Behan and other authorities on pain attempt to form elaborate classifications which include referred, reflex, transferred, projected and other pains, the artificial character is readily apparent and much confusion arises. A given pain might belong equally to several varieties. We are little better off in this respect on them when the term "sympathetic pain" accounted for all secondary pains. Deep-seated pains in the right lower quadrant are due to a local, demonstrable pathology. A patient referred to us for recurring attacks of pain in the right lower quadrant had had an appendectomy several years previously and was afterwards operated upon for extensive adhesions in the right abdomen. This case fits well into the group described by Cumston as the intestinal group, he differentiating it from the pelvic group, which includes lesions of the tubes, ovaries and ureters. Ureter catheterization showed the patient to have a right ureter, through which it was impossible to pass any sized ureteral catheter or bougie. At operation many adhesions were found which, undoubtedly, pulled on the ureter to such an extent as to cause the kink that produced the obstruction. This case illustrates the type with a demonstrable pathology in the right lower quadrant, producing symptoms of ureter or kidney disease; and while such cases are common, I believe from our limited experience, that patients with symptoms of a surgical lesion in the right lower quadrant, in which the lesion is found in the kidney or ureter, are more common than is appreciated. One has but to study the work of Head on the subject of referred pain to be impressed with the possibility of pain in the right lower quadrant due to lesion in the kidney or ureter. We all recall Kelly's statement, that 60% of all patients who complain of right-sided pain have kidney disease, the pain coming from the capsule and subcapsular tissue. According to Head, the affected nerves come from the last three dorsal and first lumbar segments of the cord.

The most conspicuous pathological conditions of the kidney which cause pain in the right lower quadrant are the infections, and pain in

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this region due to a calculus kidney we know of in but one case: in this one there was a possibility of a ureteral stone. However, the latter was never demonstrated by x-ray or cystoscopy, as the patient would not consent to these procedures.

Movable kidney in our experience produces pain in the right lower quadrant in a percentage of cases. In two cases recalled the pain was not of the referred type, but due directly to a sensitive kidney found in the locality mentioned. In acute congestive conditions of the kidney, it is possible to obtain a referred pain. In medical nephritis Behan presents cuts of tender zones. New growths of the kidney—the hyper-nephromata—may cause pain in the right lower quadrant.

Maylard, in referring to the reno-renal reflex, cites a case of left kidney disease with pain in the right lower quadrant.

Pathological conditions of the upper ureter, as a calculus lodged at the uretero-pelvic junction, will cause a referred pain in the right lower quadrant. Such a case was seen by us through the courtesy of the surgeon who had operated upon the patient for appendicitis. The appendix at operation was of the anemic type and really not diseased. The pain, complained of by the patient, recurred as soon as he was up and about again, and x-ray and ureter catheterization revealed a calculus at the point of first constriction in the ureter: we removed it and the patient was relieved of his pain. A urinary examination made of this patient's urine at the time of first operation revealed blood and a few leucocytes. As blood is found in the urine in so many appendix cases, it rather impairs the value of this aid to differential diagnosis. Pain elicited by deep pressure at the point of intersection of a horizontal line drawn from the iliac spine and one drawn perpendicularly at the pubic spine of either side, will give us approximately the point at which the ureter crosses the pelvic brim, the second point of physiological narrowing of the ureter, and a common point of arrest in the passage of renal calculus. Calculi impacted at the third point of physiological narrowing of the ureter generally produce pain low down in the right lower quadrant and groin, which radiates to the inner side of the thigh. Right-sided ureteritis may produce pain in the right lower quadrant, and it is generally provoked by deep pressure at the point where the ureter crosses the brim of the pelvis, as described above.

We cannot dismiss the subject of right-sided abdominal pain due to ureter and kidney disease, without emphasizing the importance of always being on guard for the possibility of renal tuberculosis. This has been most forcibly impressed upon us recently when we removed a large tuberculous pyo-nephrotic kidney from a patient, who had had her appendix and right

ovary removed for colicky pain in the right lower quadrant.

Bladder disease does not cause pain in the right lower quadrant, except as it may extend into the right side from the suprapubic region. We have seen several cases of diverticula, which extended into the right side, and deep pressure on the tumor would cause pain. In two cases of congenital hernia with symptoms of irritable and frequent urination, there was marked pain in the right lower quadrant. At operation for hernia, the bladder was found to be adherent to the hernial sac.

In the female, urethral disease is felt in the area of the twelfth dorsal nerve, which corresponds more or less with the right lower quadrant.

In cases of disease of the urethra in the male, we do not recall any which caused pain in the right lower quadrant; nevertheless, disease of the posterior urethra, prostate, vesicles, and the structures in the prostatic urethra are so closely associated with the urethra that it is difficult to differentiate. Fuller first called our attention to vesicle colic, and we are certain that a right-sided diseased vesicle has oftentimes been mistaken for appendicitis. Young, Geraghty and Stevens, in their article on prostatitis in the 1906 Transaction of Johns Hopkins Hospital Association chart, referred pain in the right lower quadrant as being due to prostatic disease; however, most all cases of chronic prostatitis are associated with vesiculitis.

In Conclusion. It would seem that a careful interrogation of any subjective or objective symptom, pointing to disease of the genito-urinary tract, and a painstaking examination of the urine, not of one specimen, but of several, may suggest disease and a further study of these organs before operating for obscure pain in the right lower quadrant.

DISCUSSION.

DR. F. H. GERRISH, Portland, Me.: Not only does pain in the appendix region sometimes depend upon acute trouble at a considerable distance, but a bad appendix may occasion great disturbance in another organ, without displaying any symptoms directly. A case illustrating this occurs to me: A young woman had a constant irritation of the bladder. Finding no calculus or other obvious cause, I etherized her, dilated the urethra, and explored every part of the bladder; but nothing was discovered to account for her suffering. A while afterward she had a frank appendicitis, and I operated, removing an appendix that had evidently been the seat of a low-grade inflammation for a long time. After recovering from the anesthesia, she was able to retain her urine normally. The irritation of the bladder was a reflex from the chronic appendicitis.

DR. GARRY DEN. HOUGH: I would like to add—acute inflammation of a Meckel's diverticulum.

DR. ARTHUR T. JONES: There is another condition which I wish to mention; it is that of enlarged mesenteric glands, which are found rather frequently. Many of the glands are calcareous and are often tuberculous in origin. These cases are usually operated upon with the diagnosis of appendicitis. Often we find sufficient inflammatory condition to account for the enlarged glands. The ileum may be bound down into the pelvis, producing acute symptoms. One feature that is important in cases of tuberculous mesenteric glands is the low leucocyte count. With pain in the right lower quadrant, where you expect to find the appendix diseased, but in which you find it not sufficiently inflamed to account for the symptoms, investigate the mesentery for tuberculous glands and follow the ileum along for several inches, and you will often find the cause of symptoms.

DR. JOHN H. CUNNINGHAM, JR.: Dr. Townsend has called our attention to the more common condition within the genito-urinary tract which may give rise to abdominal symptoms in the interesting right lower quadrant of the abdomen. Those especially interested in abdominal surgery, and less so in genito-urinary surgery, may receive help in the differential diagnosis of obscure conditions located in this region. While it is true that there are diseases of the genito-urinary tract which give rise to the suggestion of an abdominal disease, the reverse is also true. Disease of the appendix and the pelvic organs may give rise to symptoms directing attention to the urinary tract, and give the impression that the condition is dependent upon diseases of the urinary system rather than to diseases of any abdominal organ. I have seen several cases in which such symptoms have been dependent upon an appendix adherent to the ureter, some pre-operative and some post-operative. The former have produced an infection of the urinary tract in some instances, and post-operative adhesions following appendectomy have caused urinary symptoms by involving and constricting the ureter. I have come to consider any instance of hydro-nephrosis in which an appendix operation has been performed that the obstruction to the ureter may most probably be found in the appendix region. I have had cases suffering severely with frequent and painful urination, in which the ovary has been found prolapsed into the pelvis, and adherent to, or adjacent to, the bladder, whereby even moderate distention of the bladder produced most distressing dysuria. Most of the cases have been patients upon whom pelvic operations have been performed, without fixation of the ovary. The removal of the ovary in these cases has resulted in complete relief.

DR. P. E. TRUESDALE: A young man, 28 years old, was referred to me to be operated upon for chronic appendicitis. There was little in his history or physical examination to excite one's suspicion of kidney stone. However, having adopted a routine method of radiographic examination of the kidney fossa before operating for chronic appendicitis, the search for the possible presence of stone in this case revealed as many as five in the right kidney. This print shows five calculi quite clearly. The urine showed a few cells from the kidney pelvis. The kidney was palpable, but not perceptibly enlarged, at least, to the degree that one would expect with the presence of several fair-sized stones. X-ray examination is a simple precaution in similar cases

for one who is not a genito-urinary specialist, and, undoubtedly, would be a safe course for others to pursue who have special diagnostic ability in this field.

TUMORS OF THE SPINE AND CORD.*

By WILLIAM JASON MIXTER, M.D., BOSTON.

The group of cases here reported includes all those coming under my care in the past four years in which a diagnosis of probable tumor of the spine or cord was made, whether that diagnosis was confirmed at operation or not. Twenty-one of them were first seen at the Massachusetts General Hospital and the other five in private practice. The diverse pathological conditions met with in a series of only twenty-six shows, not only the chances for a surprise which the surgeon has when he operates on one of them, but also the chance of improvement in differential diagnosis which intensive study in the future should develop.

The examination of neurological cases has been changed a good deal in the past few years, and it may not be out of place to enumerate the routine used where tumor of the spine or cord is suspected.

This examination is similar to that used by Dr. Charles Elsberg and, in fact, is based largely on the one published by him.

A careful history should be taken, particular effort being made to bring out the following points:

Any evidence of malignant disease.
Syphilis (congenital or acquired).
Birth injury or congenital defect.
Loss of strength in the arms or legs.
Clumsiness or stiffness.
Weakness or stiffness of the back.
Pain (location and character).
Changes in sensation other than pain.
Change in sexual life.
Change in sphincteric control.
General physical examination.
Neurological examination as follows:

Examination of cranial nerves, including the examination of the fundus.

Romberg sign.

Rigidity of the spine. Presence of kyphos or scoliosis.

Tenderness of spinous processes on percussion or manipulation.

Paralysis, weakness, wasting or spasticity of any muscles or groups of muscles.

Ataxia of either arms or legs.

All superficial and deep reflexes.

Condition of the anal sphincter.

Sensory examination, to include touch, pain and thermal sense, taking care to determine accurately the upper border of disturbance and

* Read at the inaugural meeting of the New England Surgical Society, Boston, Oct. 6, 1916.

the presence or absence of hyperesthesia. (It is well to chart the sensory changes).

Position sense.

X-ray, usually of the whole spine, with cylindrical plates of suspected areas.

Lumbar puncture with determination of pressure, freedom of flow of cerebrospinal fluid, color, cell count, presence of proteid, Wassermann and colloidal gold tests.

(Dr. J. B. Ayer has been kind enough to do the lumbar punctures on most of the recent cases).

Full clinical histories of all of this series would be uninteresting, but abstracts of most of them are given as follows:

CASE 1. P. T. W. Male, 41 years. Diagnosis: Glioma of the dorsal cord.

History. Increasing weakness of the legs, and pain in the abdomen for five years, with partial loss of sphincteric control. Examination showed marked weakness and ataxia of legs, inability to walk, all tendon reflexes of the lower limbs were much increased. Ankle clonus and Babinski present on both sides. Incontinence of urine and feces. There was marked sensory change below the fifth dorsal level. A large decubitus was present. Wassermann was negative. No examination of the cerebrospinal fluid was made.

A diagnosis of probable tumor of the cord was made and laminectomy was performed, exposing the cord from the third to the sixth dorsal segment. The cord showed a fusiform swelling about 5 cm. in length, which was purplish in color and was evidently due to an intramedullary tumor.

The tumor was removed in two stages, the cord being split at the first operation, and the extruded tumor removed some weeks later. Pathological examination showed it to be a glioma. The tumor, which was 3 by 4 cm., had already caused such destruction of cord tissue that only slight improvement could be hoped for.

This patient made an uneventful recovery from the operation, but remained almost completely paralyzed. He died three months later from renal infection. There was no autopsy.

CASE 2. S. H. M. Male, 50 years. Diagnosis: Glioma of the brain and cord.

History. Symptoms of four months' duration, beginning with disturbance of vision and vertigo. Later, headache and vomiting. At this time he developed severe pain in the back, groins and thighs, inability to walk and numbness of legs. All symptoms were growing rapidly worse. Positive findings as follows:

Cranial nerves:

1. Normal.
2. Vision only fair. Left homonymous hemianopsia. Moderate degree of choked disc.
- 3-7. Normal.
8. Hearing poor, particularly on left.
- 9-11. Normal.
12. Tongue protruded slightly to left.

Pupils: Right larger than left. Reaction normal. No aphasia. Memory and orientation fair. Indefinite history of uncinate gyrus attacks. No asteriognosis. Romberg is questionable on account of weakness. There has been ataxia of the legs in the past,

but they are now almost completely paralyzed. There is marked disturbance of sensation on the legs and trunk, which cannot be mapped out on account of the patient's stupidity. Sphincters are not disturbed. All reflexes are markedly diminished. Muscle sense is absent in the legs. Normal plantar reflex present.

The spinal fluid was, under increased pressure, clear, pale greenish yellow color, 15 cells per cu. mm. Noguchi and alcohol tests positive. Colloidal gold test positive for tumor or tuberculosis. Wassermann negative. X-rays all negative.

In view of the increased intracranial tension, a decompression was done, and the symptoms directly referable to the cord were neglected. The brain was found under considerable tension and no tumor was made out. The patient died on the eighth day, without any change in symptoms, from pneumonia.

Post-mortem examination showed a glioma of the right cerebral hemisphere with extension into the cerebellum and down the membranes of the cord to the cauda equina.

CASE 3. A. M. M. Female, 36 years. Diagnosis: Solitary tubercle of the spinal cord.

History. Two years before her entrance to the hospital the patient was exposed to tuberculosis for six months while caring for her sister, who died of the disease. This was followed by a severe attack of "bronchitis" and pleurisy, at which time her chest was aspirated and much fluid withdrawn. Six months ago she began having severe pain in the groins and legs, which has been growing steadily worse, and during the past few weeks has been associated with a rapidly increasing spastic paralysis of the right leg. There has been no sphincteric disturbance.

Positive findings on examination were as follows:

The lungs suggested latent tuberculosis. Normal mobility of the spine was present. There was no kyphos or tenderness. The right leg showed a complete spastic paralysis, while the left was normal. All reflexes were markedly increased on the right and a right Babinski was present. Below the tenth dorsal level there was considerable sensory disturbance, but nowhere was sensation absolutely lost. There was no band of hyperesthesia.

The cerebrospinal fluid was colorless but slightly cloudy, and showed many lymphocytes on microscopical examination. Wassermann and x-ray examinations were negative.

A tentative diagnosis of tuberculosis was made, but in view of the fixed upper level of cord disturbance and the severity of her symptoms, exploration was deemed advisable.

At operation the cord was exposed from the ninth dorsal segment down, and nothing of moment found. The canal was not explored upward. The wound healed without incident, but she grew steadily worse, becoming completely paralyzed and incontinent, and finally developed a very large decubitus. During this time there was no apparent change in the upper level of sensory disturbance. She died nine weeks after the operation.

At autopsy a solitary tubercle 1 cm. in diameter and practically replacing the whole centre of the cord, was found 3 cm. above the upper end of the incision in the dura.

CASE 4. E. D. W. Male, 50 years. Diagnosis: Cyst of cervical cord.

History. Seven years before his entrance to the

hospital the patient began having shooting pain at times in the left arm, with some stiffness in the neck and shoulder. Three years later the pain was replaced by numbness, and about two years later he began to notice stiffness in the left leg and unsteadiness in walking. More recently both legs and arms have become involved and he has had retention of urine and constipation at times.

Positive findings as follows: There was weakness and atrophy of left forearm. Reflexes were absent on the left and increased on the right. There was general weakness of both legs. The knee jerks were increased, the right more so than the left. Babinski, Gordon and Oppenheim reflexes present on both sides. Sensation (touch, pain, heat and cold) was diminished below clavicles and lost below the fourth rib. The cerebrospinal fluid was of a clear, yellow color. Gold test positive for tumor or tubercular meningitis. Wassermann negative. Pressure normal. Six mononuclear cells per cu. mm.

At operation the cord was exposed from the fourth to seventh cervical segments. It was much swollen and hard, and on splitting the cord a cyst was found filled with yellow fluid, which measured about 3 x 1 cm.

Following operation there was no change for a time and then his symptoms gradually increased, with complete paralysis of legs and arms, and loss of sphincteric control. One year later he had improved enough to use his hands, but more recently this power has been lost again. He has reported only by letter since leaving the hospital three years ago, as he lives a very long distance from Boston.

CASE 5. P. E. V. Male, 19 years. Diagnosis: cholesteatoma of cervical cord.

History. Six years ago the patient had some pain in back off and on for three months. One year later he began having pain and weakness in right leg, causing him to drag it in walking. Eighteen months ago, after a fall, he developed numbness and weakness in shoulders. For past ten months both legs have grown stiff and clumsy and he has had to use crutches. Loss of control of bladder and rectum a few times. Now he cannot walk at all, and has considerable pain in the back and legs.

Positive findings as follows: The left pupil was greater than right. His arms were of normal strength, except for definite ulnar weakness on left. The arm reflexes were active on the right and absent on the left.

Abdominal reflexes were present only in lower quadrants.

Cremasteric reflexes absent.

The knee jerks and ankle jerks were much increased. Patellar and ankle clonus, double Babinski and Oppenheim being present. His legs were both spastic, almost immovable and held crossed.

The seventh cervical and upper dorsal spines were very prominent, and there was some stiffness of the spine.

Sensory examination showed marked diminution of touch sense on the trunk, legs and left arm, and diminution of pain and temperature sense on the left half of body and the left arm.

The cerebrospinal fluid was clear and colorless. Pressure, 140. Alcohol test positive for proteid. Other tests negative.

The x-ray examination was reported normal. Examination of the plates after operation showed a

marked thinning of laminae from third cervical to second dorsal vertebra.

Laminectomy revealed a fusiform swelling of the cord and marked thinning of the laminae from the third cervical to second dorsal. Incision of this mass showed it to be a cyst filled with cholesterol and hair, the sac being about 2 x 2 x 10 cm., with the cord spread out on its ventral surface. The posterior portion of the sac was cut away and its contents removed. The dura was not sutured.

His convalescence was uncomplicated, and up to the present time his neurological condition has gradually improved. At the present time, nearly a year after his operation, he can walk quite well with a cane, but tires easily if he goes more than a mile. There is definite ulnar weakness present in the left hand and moderate spasticity in the right. His reflexes are everywhere increased and there is a double Babinski.

The changes in sensation are similar to those present before operation but much less marked.

CASE 6. C. J. M. Male, 40 years. Diagnosis: varix of lumbar cord.

History. Pain in legs and spine beginning five years ago. There has been some constant pain and also acute attacks, in which the pain is very severe. One and one-half years ago he began having difficulty in starting urine, and one year ago great difficulty with his bowels. These symptoms have persisted. He has had many forms of treatment, including orthopedic appliances and osteopathic manipulation.

Positive neurological findings.

Knee jerks were increased, the left being greater than the right.

Ankle jerks not obtained.

Plantar reflexes equal and normal.

No clonus, Oppenheim or Gordon reflexes present.

There was moderate atrophy and weakness of all the muscles of the right leg, and right toe drop. Marked tremor of legs present. Joint and muscle sense unimpaired.

Rectal sphincter flaccid. No sensory changes. X-rays negative.

Cerebrospinal fluid clear, deep yellow color. Pressure not increased. Four cells per 4 cu. mm.

Proteid tests all strongly positive.

Colloidal gold positive for tumor or tuberculosis. Wassermann negative.

Although the signs were confused and the absence of sensory change surprising, a tentative diagnosis of tumor of the cauda equina or conus was made and operation advised.

Laminectomy, with exposure of the lumbar cord and cauda equina, showed a marked varicosity of the dorsal veins over the cauda equina and sacral cord. No tumor was seen in this vicinity and none felt by a catheter passed up and down in the spinal canal. Nothing was done to these veins, and the wound was closed as usual.

Convalescence was uneventful. There was gradual, steady improvement, beginning while in the hospital, and which lasted for six months. At that time there was recurrence of all symptoms. He was readmitted to the hospital for further study. Examination revealed the signs as before operation. X-rays, etc., negative. No further operation advised as yet.

CASE 7. O. J. D. Male, 46 years. Diagnosis: fibro-sarcoma of dura.

History. Ten months before entrance to hospital his legs gave way and he fell to the ground. A few days later he began to have a feeling of numbness in both hips. There was no paralysis at this time. Three months later pain and tingling began in both legs, and two months after this the legs began to grow weak. Has been getting steadily worse, and he is now bedridden and incontinent of urine and feces.

Positive neurological findings as follows:

There was marked atrophy of both legs and paralysis of sphincters. All the muscles of left leg were paralyzed and reflexes diminished or absent. Right very weak. Reflexes everywhere increased.

Sensation was diminished to touch, pain and temperature up to the iliac crests and in a saddle back area over sacrum. Lumbar puncture was not done. Blood Wassermann negative. X-rays negative.

Notwithstanding the fact that the patient dated all his trouble from the fall, and thought that he had injured his spine at that time, a probable diagnosis of tumor was made and laminectomy advised.

At operation a dural tumor 2.5 x 3 cm. was found at the level of the first lumbar vertebra, to the right of the cauda equina. This was completely removed, together with a narrow margin of dura about it. Pathological report, fibro-sarcoma.

Motor and sensory functions have steadily increased, and the patient reports by letter four years after operation that his greatest difficulty is partial loss of bladder control and weakness of the legs, but that he is still improving and expects to be well before long.

CASE 8. N. T. L. Female, 42 years. Diagnosis, fibro-sarcoma of dura.

History. Two years before admission to hospital the patient noticed that her feet were "clumsy." About this time she had pain in the back for one night, which was severe enough to keep her awake, and has had no pain since. The clumsiness and stumbling gradually increased, and she found she could not distinguish hot or cold or feel pin prick. This gradually extended from the feet up the legs to her waist. Later she had urgency of defecation and urination, but no incontinence. These symptoms have all grown steadily worse and she can walk only a little.

Neurological findings as follows: Knee jerks were increased, right being greater than the left. Ankle jerks increased, clonus on right. Babinski on right. Normal plantar on left. No Gordon or Oppenheim. Sphincters normal. Distinct loss of muscular power.

Sensation: Loss of position sense. Almost complete loss of pain and thermal sense below sixth dorsal. Loss of pain sense seems to extend up to fourth dorsal. Touch not markedly impaired.

Cerebrospinal fluid: Pressure, 210.5 cells per cu. mm. Clear and colorless. Proteid tests positive. Colloidal gold positive for syphilis or non-tubercular inflammatory process. Wassermann negative.

This patient was thought to have multiple sclerosis for the first 18 months of her illness, but as time passed, and the upper level of sensory disturbance became more marked, this diagnosis was abandoned, and a probable diagnosis of tumor of the cord was made.

At operation the dura was exposed from the level of the third dorsal segment to that of the sixth, re-

vealing a rounded, irregular tumor 3 cm. across, arising from the dural sheath of a posterior nerve root at the fourth dorsal level on the right. This was completely removed, together with the nerve root and adjacent dura. The dura was closed with fine silk. Pathological report: fibro-sarcoma.

She made an uneventful convalescence and at the present time (two years after operation) her neurological examination is absolutely negative; the spine is flexible, and she has been working as a laundress for the past six months.

CASE 9. J. K. Male, 53 years. Diagnosis: neuro-fibroma of posterior root.

History. Pain in right thigh and knee for 17 years, associated with disturbance of thermal sense and weakness of muscles of lower leg. Two years before his entrance to the hospital a careful neurological examination showed disturbance of sensation to both legs and in a saddleback area over sacrum, touch, pain and temperature all being involved; also marked weakness of the right glutei and paralysis of all muscles of the right leg below the knee. More recently he has had some weakness of the left leg.

Positive neurological findings as follows: The right leg is somewhat smaller than left. There is considerable weakness of muscles of both legs, including glutei and paralysis below the knees, except for slight movement of the toes of the left foot. Knee jerks: right absent; left increased. Ankle jerks absent. Plantar reflexes absent.

Sensation: There is a saddleback area of partial anesthesia about anus (touch, pain and temperature). Same on outer sides of both thighs. The feet are almost completely anesthetic.

X-rays negative. Spinal fluid clear, colorless; not under pressure, 40 cells per cu. mm.

All proteid tests positive. Colloidal gold test positive for tumor or tuberculousis.

A diagnosis of tumor of the lower part of the cauda equina was made and exploration advised.

Laminectomy was performed exposing the lower two-thirds of the cauda equina and nothing abnormal found. There was resistance to the passage of catheter 4 cm. above this level. On account of patient's condition, further exploration was deferred until some weeks later. At this time a cylindrical tumor 3 x 1 cm. was removed, arising from a posterior nerve root, which on pathological examination proved to be a neuro-fibroma.

At this time (one year later) motor function has partly returned, although he still has toe-drop. He can walk with a cane and has almost no pain. Sensation has almost entirely returned.

CASE 10. S. D. K. Female, 20 years. Diagnosis: tuberculousis of spine.

History. Pain between shoulders for six months, with slight kyphos in upper dorsal region. For two months she has had weakness and numbness of the feet and legs. All these symptoms increasing steadily.

Examination showed a slight kyphos in the region of the first and second dorsal vertebrae. There was no tenderness of the spine and no spasm of the muscles of the back.

Abdominal reflexes were absent.

Knee jerks were increased, the right being greater than the left. There was double ankle clonus, Babinski and Oppenheim. Temperature sense

everywhere undisturbed. Tactile sense was lost below second dorsal and pain sense below eighth dorsal. There was no area of hyperesthesia.

X-ray shows a difference in articulation of lower cervical vertebrae on the two sides.

Spinal fluid shows no increase in pressure, 13 cells per cu. mm.

Proteid tests positive. Colloidal gold positive for tubercular meningitis or tumor. Wassermann negative. Von Pirquet skin reaction positive.

A probable diagnosis of tumor of the seventh cervical or first dorsal vertebra was made and laminectomy advised.

At operation the cord was inspected and found normal. The dura was then closed with silk and a mass in front of the dura opposite the sixth cervical vertebra was investigated. A tubercular abscess was opened and about 50 cc. of pus evacuated. She made a slow recovery, and now, at the end of two years, is in excellent general condition and has no pain.

Examination shows marked rigidity of the neck and slight weakness of legs. Her reflexes are somewhat increased. There are no sensory changes. She is doing her own work and has had a child since the operation.

CASE 11. M. A. Male, 22 years. Diagnosis, tuberculosis of spine.

History. Sudden sharp pain in lumbar region, radiating down the legs six months before entrance to hospital. This pain has increased gradually in severity and for six months he has been unable to walk, partly from weakness and partly on account of pain.

Positive findings were as follows: The lumbar spine is somewhat stiff, particularly in rotation, which causes pain referred to the legs. There is marked atrophy of both legs, with complete motor paralysis. Knee and ankle jerks absent. No plantar response. No clonus. Sphincters normal. Pain sense diminished or lost below third lumbar. Touch and thermal sense not disturbed.

X-ray shows a destructive process of third lumbar vertebra. Cerebrospinal fluid was yellowish in color and coagulated in a few moments. Proteid tests positive.

It was impossible in this case to make a positive diagnosis. Both tumor and tuberculosis were considered and the x-ray examination was more suggestive of tumor than of tuberculosis.

At operation a large tubercular abscess was opened to the left of the vertebral column without doing a laminectomy, and much pus was evacuated. The involvement of the vertebral bodies could be plainly felt. The abscess cavity was wiped out and the wound closed without drainage.

Following operation there was immediate relief of pain, and within a few days gradual restoration of motor function. He has been in a plaster jacket ever since operation and now, at end of four months, can move both legs normally, although he has not been allowed to walk.

CASE 12. A. M. C. Female, 54 years. Diagnosis: myeloma of spine.

History. Pain in the lumbar spine for the past two years. There has been numbness and weakness of both legs for the past ten weeks. The numbness was first noticed as a small spot on the outside of right thigh, and since has gradually spread to both

legs. There has been difficulty in starting the urine for two months.

Positive neurological findings: Knee jerks were increased. Ankle jerks not obtained. Positive Babinski, Gordon and Oppenheim. Partial loss of sensation (touch, pain and temperature) across lower abdomen, upper right thigh and below right knee.

Muscles of both legs were weak, and position sense was faulty. The sixth and seventh dorsal vertebrae were quite tender on pressure. Slight kyphosis present. The urine showed a very slight trace of albumen. Spinal fluid was colorless, and the Wassermann, alcohol and colloidal gold tests were all negative.

X-ray shows a destructive process of sixth dorsal vertebra.

A diagnosis of malignant disease of the sixth dorsal vertebra was made and operation advised, although it was felt that little could be done.

At operation a soft, gray infiltrating tumor was found arising from the vertebral body or the intervertebral disc compressing the cord. A portion of the tumor was removed and fowl laminae removed for decompression.

Pathological report, myeloma.

Bruce-Jones bodies were later found in the urine. About two weeks after operation the patient became suddenly almost entirely paralyzed below waist, apparently from slipping of the already weakened vertebrae. The subsequent history has been progressive increase of symptoms and general weakness, and x-rays show involvement of the vertebrae from sixth to ninth dorsal inclusive.

CASE 13. J. D. F. Male, 43 years. Diagnosis: spindle cell sarcoma of lumbar spine.

History. Gradually increasing pain in the lumbar spine for one year. For four months he has had progressive pain and weakness of the left leg, beginning in the thigh. At times there is a feeling of numbness. There is no loss of sphincteric control. There has been considerable loss of weight.

Positive findings as follows: The lower spine was rigid and showed a moderate scoliosis to the left. There was some atrophy and weakness of muscles of the left thigh. Right thigh and lower legs were not remarkable. No sensory changes could be made out. The plantar reflex was absent on left. Knee jerk diminished on left. The cerebrospinal fluid was clear and colorless and the Wassermann was negative.

X-ray negative.

A probable diagnosis of tumor of the cauda equina was made, although the absence of sensory disturbance was against.

At operation a malignant process was disclosed involving the right lateral processes and the laminae of the second and third lumbar vertebrae. Part of the tumor was excised and the laminae removed to relieve pressure. The dura was not opened. Pathological report, spindle cell sarcoma.

There was relief of pain for two weeks only, followed by rapid increase of symptoms and death in four months, notwithstanding the use of Coley-toxins.

There was no autopsy.

CASE 14. C. C. Female, 55 years. Diagnosis: round-cell sarcoma of lumbar spine.

History. Intense pain in the lower spine and

hips, beginning rather suddenly one year ago. Her left side alone was affected until three months ago. There was no weakness of legs, no loss of control, and no sensory disturbance. The pain is increased on motion.

Positive findings as follows: There was a very slight, low lumbar kyphos, with distinct tenderness from the third to fifth lumbar vertebrae. No disturbance of sensation could be made out. The deep reflexes of the legs were all increased equally. No Babinski present. There is a suggestion of left ankle clonus. Blood Wassermann, negative. All attempts at lumbar puncture gave a little bloody fluid.

X-ray shows a destructive process in fifth lumbar vertebra.

A diagnosis of malignant disease of the lumbar spine was made, and a very bad prognosis given. On account of the intense pain operation was offered as a last resort.

Operation revealed a malignant process involving the laminae of all the lower dorsal spines. On removal of some of the new growth for diagnostic purposes the dura was exposed, as the laminae in places were completely replaced by new growth. Nothing further was attempted on account of the extent of the process. The patient failed rapidly and died in a few hours.

Pathological report: round-cell sarcoma. No autopsy was allowed.

CASE 15. C. J. H., male, 50 years. Diagnosis: metastatic hypernephroma of spine.

History. Six months before admission to the hospital the patient fell, injuring his lumbar spine. This was followed by pain in back and thighs and a rigid spine. Three days before admission there was sudden, complete paralysis below the mid dorsal region. He has had considerable pain ever since.

Positive findings as follows: There is complete flaccid paralysis below sixth dorsal segment. Reflexes absent and complete loss of sensation below this level. Zone of increased sensibility 3 cm. in width was demonstrated at level of fifth dorsal segment. Wassermann negative. There was a hard tumor of third rib just in front of anterior axillary line. X-ray showed an extensive destructive process of fourth dorsal vertebra.

A diagnosis of malignant disease of the spine was made and operation offered only as a last resort, as in the preceding case.

At operation an irregular, non-encapsulated tumor was found involving the body of the vertebra and the intervertebral discs. The tumor caused marked compression of the cord, although the dura was not invaded by it. Most of the tumor was removed and found on pathological examination to be a metastatic hypernephroma.

The patient was not relieved by the operation and died a few weeks later. No autopsy was allowed.

CASE 16. A. F. Female, 53 years. Diagnosis, metastatic leiomyoma of spine.

History. Fifteen months before entrance to the hospital she was operated on for a large fibroid tumor of the uterus. This was examined pathologically and nothing malignant noted. Eight months later she had a small tumor removed from the skin of the back in the vicinity of the left sacro-iliac joint. Six weeks ago she began having severe pain in the back between the shoulder blades. Three weeks later her pain had radiated downward

into the legs, which began to be weak and unsteady. For the last week she has not been able to walk, the pain continues with great severity, and there is some twitching in the right leg. She is incontinent of urine and feces.

Important points on examinations were as follows: The abdomen was full, soft and tympanitic; no masses could be made out, and the scar of her operation was not remarkable. Vaginal examination revealed the cervical stump, but was otherwise not remarkable. The spine was rather rigid from the fourth to the tenth dorsal vertebrae, showed a moderate kyphos, and there was a sense of fullness to the right of the spine at this level. There were two small nodules in the subcutaneous tissue of the back.

Both legs were very weak throughout. Knee jerks were markedly increased. There was double ankle clonus and Babinski.

Sensation was everywhere diminished below the level of the fourth rib, where there was a zone of hyperesthesia 2 cm. in width.

X-ray examination was unsatisfactory and lumbar puncture not done.

The small tumor on the back was removed and found to be leiomyoma, probably malignant. In view of the severe pain, laminectomy was decided upon and the laminae removed from the seventh cervical to the third dorsal. Outside the dura was a malignant tumor extending across in front of the cord and compressing it markedly. The new growth seen was removed, together with part of the bodies of the first and second dorsal vertebrae. The dura was unopened. Pathological report: metastatic malignant leiomyoma.

This patient had relief from pain for nearly a year, and almost complete relief of paralysis for eight months, and finally died of general internal metastases. The diagnosis was confirmed at autopsy.

CASES 17-22. Cases 17-22 were all cases of carcinoma of the spine following amputation of breast for carcinoma. None of them were operated on and all of them have since died.

CASE 23. B. F. Female, 53 years. Diagnosis: metastatic carcinoma of spine.

History. Breast amputation five years ago for carcinoma. Two months ago she began having dull pain in both shoulders. Three weeks later suddenly she became partly paralyzed from the waist down. This has cleared up a little, but the pain has increased and is now very severe. There is no loss of sphincteric control.

Positive findings were as follows: Scar of radical removal of breast. It was well healed and there was no evidence of recurrence. The upper dorsal and lower cervical spine was rather rigid, but there was no tenderness or kyphos. Diminution of pain and touch demonstrated to the level of the third rib. There was no demonstrable change in thermal sense.

Abdominal reflexes were normal. Knee jerks active. Achilles jerks active. No ankle clonus. Double Babinski present. There was marked general weakness of muscles of legs. X-ray suggests a destructive process in second dorsal vertebra. Lumbar puncture gave clear fluid under normal pressure. Wassermann negative. Proteid reaction not done.

It was felt that this might possibly be a new growth

arising from the dura, and not metastatic from the breast on account of the length of time which has elapsed since her operation, and exploratory laminectomy was advised.

At operation metastatic malignant disease was found, involving the laminae and bodies of the fifth and sixth cervical vertebrae and compressing the cord. This was partly removed and a rather wide laminectomy done. The dura was not opened.

X-ray treatment was instituted while she was in the hospital following operation. Considerable relief of pain, and her legs were much stronger when she was discharged.

CASE 24. A. B. S. Male, 50 years. Diagnosis deferred.

History. Five months before entrance to the hospital he began having sharp pain in back, buttocks and thighs, which was increased on motion and varied in severity. This was followed two weeks ago by severe pain associated with loss of control of bladder and rectum, and inability to walk. He has had no girdle sensation.

Positive findings on examination were as follows: There was no atrophy of legs, which, however, were ataxic. Knee jerks were markedly increased, but equal, and there was patellar clonus on the left. Plantar reflexes were normal, and there was no Oppenheim or Gordon. Kernig's sign was present, also marked Romberg. There was no disturbance of sensation except questionable hyperesthesia of both feet. Cerebrospinal fluid and x-ray negative.

Operation was advised in this case, although the diagnosis of tumor seemed hardly as probable as that of multiple sclerosis.

At operation the laminae were removed from the tenth dorsal to the third lumbar vertebrae, inclusive. The cauda equina was exposed, explored and seemed normal. There seemed to be some increase in the amount of cerebrospinal fluid present. The canal was not explored upward.

Following operation his condition improved markedly. Within six weeks he could walk with assistance; had very little pain and had partial sphincteric control. This improvement has been gradual but steady, and at the present time (3 years later) he walks without difficulty and is attending to his business as station agent. He has not been seen, as he lives a long way from Boston. His only complaints are partial retention of urine and that he tires easily.

CASE 25. G. T. L. Male, 33 years. Diagnosis deferred.

History. Six months before entrance he began having a sensation of numbness and pricking in right foot. (Foot seemed "asleep.") This gradually spread upward and involved the other leg. At present it reaches to the nipple line. This whole area feels dead. He walks with difficulty and does not know where his feet are going. Involuntary urination and defecation have occurred a few times during the past month. There is a sensation as of a band about his chest.

Positive findings on examination: There is slight spasm of legs; most marked on the right. Biceps and triceps jerks are lively, also knee and ankle jerks. There is ankle and patellar clonus. Double Babinski present. His gait is unsteady and Romberg's sign is positive. There is no astereognosis or ataxia of hands, but there is distinct loss of muscle sense in legs. Sensation is almost com-

pletely lost to touch, pain, heat and cold below fourth dorsal level, where there is a narrow zone of hyperesthesia. Cerebrospinal fluid pressure 100. No cells present. Proteid tests negative. Gold chloride suspicious of syphilis. Wassermann negative.

Notwithstanding the fact that the proteid tests were negative, a diagnosis of cord tumor was made, and operation advised.

Laminectomy was performed, with exposure of the cord from the fifth cervical to the third dorsal segments. The cord seemed normal in every way, except that it was a little smaller and whiter than usual. A catheter passed up and down inside the dura met no obstruction. Nothing could be seen in front of cord or on the nerve roots.

His convalescence surgically was uneventful, but his neurological condition gradually grew worse while in the hospital; he became incontinent, developed partial paralysis of right arm and hand, and finally went home far worse than when he was first seen.

CASE 26. H. C. Female, 35 years. Diagnosis deferred.

History. Three months before entrance to hospital she began to lose control of her legs, and her whole body seemed to grow numb. A little pain in the back has been present since the beginning of the trouble. No loss of sphincter control.

Positive findings were as follows: There is general muscular atrophy of legs and trunk, also present to a lesser degree in the hands and arms. The spine is normal. There is anesthesia to the umbilicus. Partial loss of sensation from there to about the second dorsal level. There is no definite upper limit. The biceps and triceps jerks are somewhat increased, and the knee and ankle jerks are markedly increased. There is double clonus, Babinski and Oppenheim. Cerebrospinal fluid is normal. X-rays and Wassermann negative.

The diagnosis in this case was thought to be between tumor of uncertain level and multiple sclerosis, and operation was advised owing to the rapid progress and fatal outcome unless the condition could be relieved.

Laminectomy was performed twice on this patient, and the cord explored from the ninth dorsal to third cervical segment. The cord was small, hard and hyperemic, and between the arachnoid and the pia, particularly in the cervical region, were many dense adhesions. There was no improvement following operation, and the patient is gradually getting weaker.

An enumeration of the pathological conditions found at operation or autopsy is as follows:

Glioma	2
Cyst of the cord	2
Varix	1
Nerve root tumors	2
Dural tumors	1
Malignant tumors of the spine	3
Metastatic malignant growths	9
Tuberculosis of the cord	1
Tuberculosis of the spine	2
No pathological process found	3

(It is probable that at least two of these, if they come to autopsy, will prove to be multiple sclerosis.)

Operations were performed as follows, several patients being operated on twice:

Laminectomy	20
Operative deaths	0
Exploration of spine without laminectomy	2
Deaths (operative shock)	1
Craniotomy	1
Deaths (pneumonia)	1

The symptomatology of tumors of the spine and cord, and their differential diagnosis I will not take up in detail. There are several points of importance, however, which are well worth remembering. Pain is usually supposed to be one of the cardinal symptoms, yet it is frequently absent. One of my cases (No. 8) had a little pain one night three years before operation, and at no time since, and in at least three other cases the pain has been very slight. All the cases with malignant metastases, however, had severe pain.

An important positive sign, if present, is pain on pressure on the spinous processes. It is of great assistance in determining the level of the lesion. Present in five cases of this series.

Another important sign is a fixed upper level of cord disturbance. If this is present it should be taken as a distinct indication for laminectomy. If the motor and sensory disturbances below are gradually increasing, and the upper limit remains fixed a presumptive diagnosis of tumor is justifiable.

One of the first sensory changes may be a loss of thermal sense, and for this reason it is an important, though often neglected point.

The examination of the spinal fluid is of great importance, particularly the various reactions for proteids, and should always be done. Spinal fluid Wassermann is of great value in ruling out syphilis, and the blood Wassermann should not be taken as conclusive. X-ray is of great assistance, but if negative should be disregarded, as intradural growths will usually give little or no change, while those bone lesions which give positive findings are usually malignant.

Technic: In the first place the lesion should be localized as closely as possible. Then compare the position of the segments with the dorsal spine, locate the approximate level of the lesion and mark it on the patient's back before cutting down.

In dissecting away the muscles from the spines and laminae, keep as close to the bone as possible, and at first neglect the bleeding, which will probably be rather sharp. After the muscles are well stripped back to the outer ends of the laminae on one side, pack with gauze wrung out in very hot salt solution (120° Fahrenheit) and turn back the other side in the same way. Take plenty of room, and if necessary cut away some of the tendinous attachments below. Then remove the spinous processes with heavy cutting forceps, taking one above and one below the

probable extent of the laminectomy. I usually take off the laminae on both sides, as the field of operation is very limited in a unilateral laminectomy.

The removal of the laminae is a very important step in the operation, as carelessness on the part of the operator may cause great and irreparable damage to the cord. My own personal choice is to remove the bone bit by bit with a pair of heavy rongeurs, taking great care to obtain the fullest lateral exposure possible and, at the same time, leaving no projecting bits of bone to tear the dura when it is opened and drawn back. This method is not the fastest by any means, but with proper care should insure against damage to the cord when it is pressed back against the bone by a neoplasm lying within or in front of it. It is important to pull up on the rongeurs as each bite is taken, that the heel of the instrument may not be depressed as the blades come together and so bruise the cord. Other methods which are of value are the use of the Hudson and DeVilbie instruments, the large-sized Horsley forceps held at right angles to the laminae, or some one of the many forms of saw.

Remove as many laminae as you think will be necessary and control all bleeding with bone wax and muscle plugs, and then dissect the epidural fat away and inspect the dura. Draw the cord in its covering of dura gently to one side and inspect the vertebrae as far as possible, and then repeat on the other side. If a new growth can be seen or felt through the dura, open a little above or below, and then enlarge the incision as necessary, taking great care not to cut any of the veins that often lie thickly over the cord. The arachnoid is not adherent to the dura, and it is often possible to open the dura for several centimeters, leaving the bulging arachnoid intact.

This is an advantage, as the cerebrospinal fluid does not run out and, becoming mixed with the blood in the wound, obscure the first inspection of the cord. If, on examination, the cord shows nothing, open the arachnoid and palpate the cord very gently. A small soft catheter or sound should then be passed gently up and down along the cord to search for an obstruction, which may be investigated at this time, or if the condition of the patient does not warrant it, at some later day. The anterior aspect of the cord and the dura is then explored by drawing the cord gently first to one side and then the other. It is best to do this by catching the posterior nerve roots or dentate ligament, on fine hooks, and the procedure is often facilitated by cutting a few slips of ligament.

If x-ray shows definite destruction of the vertebrae, care should be taken to remove few laminae, and it is possible that unilateral laminectomy is indicated under these circumstances. It is important to remember that by an extensive muscular dissection, coupled with removal of the

lateral processes, it is possible to explore the vertebral bodies in the cervical and lumbar regions to a certain extent, and in the event of an extensive malignant process, stop the operation without taking away the remaining supports from an already weakened spine. This procedure was carried out in Case 11 as a result of the experience I had with Case 12, in which there was recurrence of symptoms from slipping of the diseased vertebrae.

On exposing a tumor which is dural or extradural in origin, it is of prime importance to determine, if possible, whether it is benign or malignant. Practically all tumors outside the dura belong in this latter class, and any attempt at complete extirpation is almost certain to result in failure. However, it may be possible to remove enough of the tumor so that, coupled with the decompressive action of the laminectomy, the patient will have relief from pain and other very distressing symptoms, such as incontinence, for a considerable period of time, dependent on the rapidity of recurrence. This was clearly shown in the case of No. 16. Tumors arising from the dura or nerve roots are by far the most satisfactory to the surgeon, as they are usually benign and can generally be completely excised. Dorsal nerve roots, if involved, should always be sacrificed, if by so doing the tumor can be completely excised, but motor roots should be sacrificed only if relatively unimportant. A dural defect is of little moment as compared to the complete removal of a benign tumor.

Intradurallary growths need special attention. They may usually be recognized by fusiform swelling of the cord, either general or on one side. If such a swelling is present the cord should be split longitudinally in the posterior column, care being taken not to injure the surface blood vessels. Should it be necessary to cut such a vessel, it may be picked up and tied with fine silk. The incision may be from 2.5 cm. in length, should be carried well into the cord, and should be made with a very thin-bladed knife. Frazier's knife is excellent, but if not at hand, a Gillette razor blade answers quite well. If a tumor is encountered, the incision should be carried from the upper to the lower pole, and no attempt should be made to dissect it out. If not infiltrating, it will immediately begin to extrude. Do not pull it or do anything more than take a small fragment for pathological examination, and close up the wound with the expectation of doing a second stage two or three weeks later. At that time the tumor will often be found so completely extruded that it can be removed with little or no damage to the cord. This procedure was carried out in Case 1. In Case 5 the dura was left open and the edges of the sac sutured to the muscles in order to facilitate extrusion in case a secondary operation becomes necessary. As a rule, the dura should be tightly closed with fine

silk and the muscles, fasciae and skin closed without drainage. I do not feel that plaster is necessary for a laminectomy below the second dorsal unless more than 4.5 laminae have been removed or unless the bodies of the vertebrae are involved. Plaster is indicated in high laminectomies.

In closing, I wish to summarize briefly the indications for and against operation as I see them. What are we to go on? In the first place, is the growth malignant or not. If malignant, surgery is, doubtless, ill-advised except in the presence of very severe pain, or in the hope of using radium or x-ray after a partial removal. The x-ray is probably the best single factor in determining this, but even in the presence of considerable destruction an exploration is usually deemed advisable. Very severe pain I think may be an indication for operation, even in malignant cases, as it gives a great deal of relief, even if only temporarily, as shown in Cases 13, 16 and 23. In case the x-ray is negative and symptoms of increasing pressure are present, exploratory laminectomy is always justifiable unless the patient's condition is very poor, and this should not be allowed to weigh too strongly, as the mortality of this operation is surprisingly low.

I wish to take this opportunity to express to the Neurological and Medical Staff of the Massachusetts General Hospital my deep appreciation of their interest and kindness in regard to this work; also to the Surgical Staff for permitting me to see and handle this interesting group of cases.

DISCUSSION.

DR. HARVEY CUSHING: This is a large subject, and Dr. Mixer has well covered the field and touched upon many points which might be elaborated upon. I do fewer laminectomies than I used to do. It is my feeling that a patient who has a metastatic tumor of the spine, following cancer of the breast, should not be subjected to laminectomy. There of course may be exceptions, and once or twice, in cases of extreme pain, I have divided the cord. As you know, a transverse lesion is a painless one, and the patient may live for years without actual discomforts, but it is a sorry life. For example, I have been more or less in touch with a young naval officer who was thrown from his horse eight years ago and sustained a total transverse lesion about the lower seventh cervical segment. He is free from pain, and in excellent physical condition, but his arms and legs are absolutely useless. He has been well taken care of.

Dr. Mixer's mortality is low, and I do not recall a fatality in my own series of laminectomies. But, nevertheless, it is a difficult and arduous operation. The after-treatment demands detailed attention, particularly as there may be sphincteric difficulties. It is not so easy as it is to operate upon the other side of the body.

Dr. Mixer has emphasized the fact that the meningeal endotheilomata are the most favorable lesions from a surgical standpoint. They are, as a rule, easily diagnosed. We make mistakes, of course,

but when they are found and localized there is no more satisfactory operation in surgery. When you can remove a growth cleanly and relieve pain and save people from a life of paralysis and suffering, it is an enormous consolation. I think that Dr. Mixer erred when he said that the pia protrudes after opening the dura; he surely means the arachnoid. There is one thing about these tumors that is very interesting. A little tumor of this kind is set in the spinal canal, and the cord is crowded away by the tumor. Over the growth lies one of the nerve roots, and the tumor arises, I believe, from the membranes at the point of exit of the nerve. In removing these tumors, the nerve root must be divided and the dural attachment removed, together with the growth, for otherwise there may be a recurrence of the growth.

My first experience was many years ago, in 1898; a localized and characteristic tumor. During the enucleation of this tumor I did not go quite high enough up; the tumor broke off at the upper pole. I then removed the upper fragment as a separate piece and the tumor was apparently intact. This man made a perfect recovery, and a year later I reported it as one of the six successful recorded perfect results. There were no post-operative complications and complete restoration of function. Though it was supposed to have been a perfect recovery, this man returned two years later with the same symptoms as he had before. I did another laminectomy. I came down upon another tumor of exactly the same size and appearance. I had left the little meningeal stalk of this tumor, and from it another had grown. On this second occasion I was careful to remove the dural attachment, and he again made a perfect recovery.

I use a somewhat different method from Dr. Mixer for removing the laminae, by using a succession of Doyen burrs. I think it lessens the possibility of contusing the cord, and we must all agree gentleness is essential in work on the central nervous system.

WILLIAM JASON MIXTER: I gladly accept Dr. Cushing's correction.

Laminectomies in malignant disease are unjustifiable, although they have been advised. A German surgeon advised laminectomies on all cases of tumors of the spine for relief of pain. I have never felt that that was justifiable. This case, which I have done recently, following carcinoma of the breast, was done because there was a good deal of difference of opinion; it was felt that the tumor was a dural tumor and not carcinoma, on account of the length of time that had elapsed since the operation was done.

DR. COUSINS: How do you relieve the pain, Dr. Mixer?

DR. MIXTER: Large doses of morphia. A plaster jacket helps if the spine is weakened. Morphia alone is the only relief for many cases.

BOSTON DISPENSARY EVENING CLINIC.—The Boston Dispensary has established a clinic for the treatment of diseases of the nose, throat, ear and eye for those who are at work during the day and are unable to afford the usual rates charged by specialists for such services. Fees are charged covering the cost of the service

Original Articles.

GASTRIC ULCER PRODUCED BY INTRA-VEINOUS INJECTION OF STAPHYLOCOCCUS PYOGENES.

BY EDGAR C. STEINHARTER, B.S., M.D., CINCINNATI, OHIO,

Attending Gynecologist to the Cincinnati General Hospital.

(From the Pathologic Institute, Cincinnati General Hospital.)

In a preliminary note (BOSTON MEDICAL AND SURGICAL JOURNAL, May 11, 1916) I reported that:

I. Typical peptic ulcers varying from one-fourth inch to an inch in diameter, were produced by injecting locally into the stomach wall the staphylococcus pyogenes of certain grades of virulence and a weak acetic acid solution. Not all staphylococcus cultures would answer the purpose—an organism of special virulence (for instance, one freshly isolated from the appendix of a rabbit) was necessary to produce the lesion.

(a) The injection of the organism alone usually caused the development of a small, localized and firmly walled-off abscess at the point of injection. Such an abscess as a rule was absorbed in the course of four to six days, and never showed any involvement of the mucous or peritoneal coats. In some cases no abscess was formed.

(b) The introduction of the acid alone into the stomach wall, beyond causing more or less edema, provoked no gross pathological change in the tissues; but it did seem to increase the susceptibility of the area for localization of certain grades of staphylococci injected into the general circulation.

II. The tendency of selective localization in certain organs was found to depend, among other things, upon the virulence of the organism, and could be modified by cultivation of it in functioning tissue.

A little later (BOSTON MEDICAL AND SURGICAL JOURNAL, July 13, 1916), in an article on acute arthritis experimentally produced by intravenous injection of the staphylococcus pyogenes, I called attention to the fact that experimental results showed that while the staphylococcus might exhibit a predilection for a particular region of the body, it would not always produce a gross lesion at the expected point of attack, and that, in order to produce a gross lesion, it was necessary for the staphylococcus to be of a certain grade of virulence, or for the tissue in which it had lodged to be suitably altered for the growth and action of the organism. This principle demonstrated itself repeatedly in the course of experimental production of acute gastric ulcer, and again in experimental production of acute arthritis.

It is in reference to acute gastric ulcer, developing as a result of intravenous injection of the staphylococcus of certain grades of virulence, that the following remarks are made.

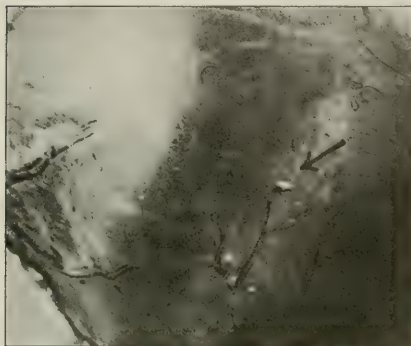


FIG. 1. Photograph of a staphylococcus focus in the subperitoneal tissue of the pylorus of the stomach of a rabbit injected intravenously two days previously. The focus is just beyond the visible termination of the blood vessel.

The ulcers formed were in most cases single, but in some cases multiple. They occurred invariably in the pyloric end of the stomach or duodenum. They varied in size from that of a pinhead to 5 x 7 mm. In some cases they were punched out, clean and well circumscribed, and in other cases merely necrotic bleeding areas. In some experiments the ulcer was the sole lesion, while in others it was associated with appendicitis, cholecystitis, arthritis.

The organisms were obtained from two sources, namely, the blood of a case of septicemia in man, and an acutely inflamed human appendix. The primary cultures in both cases were made in ascites dextrose broth, and yielded the staphylococcus in pure culture.

In so far as it was possible to determine, each was the etiological factor in the production of the particular disease with which it was associated. (This point will be further discussed in a later article on appendicitis.)

An emulsion of the staphylococcus which was isolated from the appendix produced, on intravenous injection into the rabbits, without any preliminary animal passage, stomach or appendiceal lesions in four out of five rabbits injected. On the other hand, the strain of staphylococcus obtained from the case of human septicemia was not, when freshly isolated, of the proper grade of virulence to produce gastro-intestinal lesions when injected intravenously into animals, but later, after the organism had undergone preparatory cultivation in the functioning stomach wall of the rabbit, intravenous injection of it was then followed by the formation of gastric ulcer. In the course of successive passages through the functioning stomach of the rabbit, it was found that the staphylococcus showed a

variable virulence and affinity for certain organs and tissues. For example, after two successive cultivations, the staphylococcus showed a marked affinity for the intestinal tract by localizing subperitoneally in the pyloric end of the stomach five times and in the appendix three times in the eight rabbits injected. In this series none of the rabbits showed arthritis or pericarditis. Further cultivation of the staphylococcus in three more stomachs, followed by intravenous injection, showed a falling off in the affinity for the intestinal tract, as only one out of four rabbits showed an intestinal focus, but the organism now exhibited a predilection for the pericardium, as all of the rabbits developed a fibrinous pericarditis. Still none showed arthritis. However, after passage through another stomach wall (that is, the sixth), eight out of eight rabbits now injected intravenously developed arthritis, one showed pericarditis, and two developed gastric ulcers. The technic employed was as follows:

The appendix of the human body was removed with care, to protect it from contamination, and kept under sterile conditions. On the same day it was excised, a portion of its wall showing inflammatory changes was washed thoroughly with sterile salt solution; then a small area of the peritoneal coat, outlined by means of a cutting needle, was lifted up and stripped off the subjacent tissue. The edematous fluid of the latter was planted on agar and in 150 cc. ascites dextrose broth, and incubated at 37° C. for about 24 hours. The broth cultures were then centrifuged, the solution decanted, and a suspension made of the sediment by shaking it up in

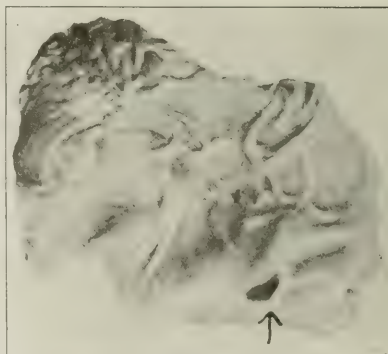


FIG. 2. Photograph of ulcer of stomach—natural size of ulcer—5 x 7 mm.

30 cc. of normal saline. The broth culture of the blood from the case of septicemia in man was incubated for 48 hours and subcultured on agar and Loeffler's blood serum.

In most cases, agar cultures made directly from the tissues or subcultured from the saline

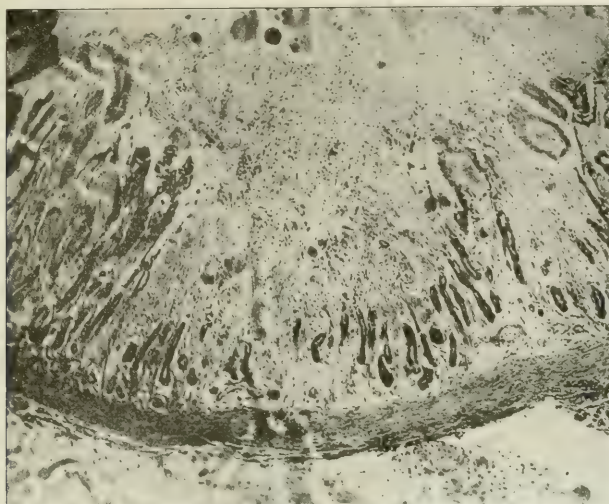


FIG. 3. Section through small ulcer of the stomach of a rabbit.

emulsions of the broth sediment were used in making emulsions for intravenous inoculation. Such emulsions were prepared by suspending the growth of an agar slant in 10 cc. of saline. The dose of emulsion employed varied from one-fourth to one cc. for a rabbit and three cc. for a dog. The intravenous injections were made in the marginal ear vein of the rabbit and in the femoral vein of the dog. Suspensions were always examined and subcultured before they were injected.

Animal passage was accomplished by opening the peritoneal cavity of the rabbit, and introducing a saline emulsion of the staphylococcus

through a hypodermic needle into the tissue of the pylorus. After one to five days the animal was killed and cultures of the injected stomach area were made in ascites dextrose broth and on agar.

REPRESENTATIVE PROTOCOLS.

RABBIT 140. Two-thirds grown. Injected intravenously with $\frac{3}{4}$ cc. of an emulsion made from a 3-day-old agar growth of the staphylococcus of human septicemia which had undergone its fifth successive passage. On the fourth day after inoculation the rabbit appeared to be losing weight and showed slight lameness, but did not seem very sick. It was killed the same day with a blow on the head. The stomach on the peritoneal surface shows a puckering at the pyloric end, but otherwise is normal. At a corresponding area on the mucous sur-



FIG. 4. Low power of a mass of staphylococci in the tissue of the submucosa of the duodenum.

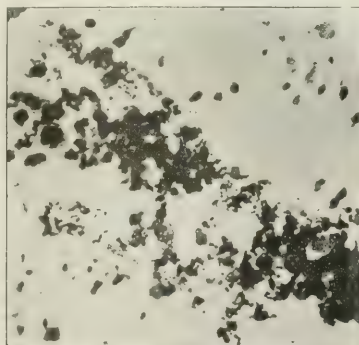


FIG. 5. High power of area indicated in No. 4, showing staphylococci and leucocytes.

face there is a deep, punched-out ulcer 5 x 7 mm. The base of it is covered with blood, and about one-half inch away from it are two small erosions. Considerable digested blood lies free in the gastric cavity. The right knee contains slight amount of turbid fluid; the other joints are negative. Heart, kidney, lungs and gall-bladder are negative.

Cultures of the right knee and stomach yield staphylococci in pure form.

Culture of the blood is negative.

RABBIT 163. Two-thirds grown. Injected intravenously with 1 cc. emulsion of an agar growth obtained by culturing human appendix subperitoneally 24 hours after onset of acute appendicitis. On the third day after inoculation the rabbit appeared normal; on the fourth day it looked sick and did not eat. It was killed the same day with a blow on the neck. All organs except the stomach are negative. The peritoneal coat of the stomach at the pyloric end reveals numerous ulcerations quite similar to those found on the mucous surface of the human appendix, from which organ the staphylococcus was originally obtained.

Dog. Female, weight, 11 kilos. Injected into the femoral vein with 3 cc. of an emulsion of a 24-hour agar culture of an acutely inflamed knee of rabbit No. 56, which animal, in addition to having an arthritis, showed an acutely inflamed appendix.

Prior to being injected into rabbit No. 56 the staphylococcus organism had been recovered from a case of septicemia in man, inoculated into rabbit No. 27 and cultured from the knee of 27, showing arthritis. The organism was then passed through stomach wall No. 32, recovered from same and inoculated intravenously into 45, where it developed a stomach focus. This focus was cultured, and the growth was injected intravenously into rabbit No. 56.

The day following inoculation, the dog seemed normal and ate about three pounds of meat. On the second day, after injection, she began to look sick and moved about with little energy. On the third and fourth days she would not eat, and lay stretched out in her kennel. Her abdomen was tender, rigid and spastic to the touch. The floor of the kennel was partly covered with recently coagulated blood. The animal was etherized and autopsied at the end of the fourth day; weight, 9 kilos. While being etherized, considerable dark unclotted blood was discharged by rectum. Knee joints show slight redness of periarticular tissue and cloudiness of joint fluid. Elbow joints negative. Stomach shows a few hemorrhagic erosions. The duodenum shows, about two centimeters from the pyloric ring, a necrotic area measuring 6 x 7 mm. The center of it is a bleeding point, and apparently the chief source of blood found in the lower bowel. There are numerous small hemorrhagic erosions throughout the duodenum. The ileum, jejunum and large bowel, except for the presence of blood in the latter, are negative. The appendix shows the mucosa to be thickly studded with punctate hemorrhagic elevations. The kidneys are congested; the gall-bladder is negative. Cultures of the duodenal ulcer, duodenal and gastric erosions and appendix show a mixed growth of the staphylococcus and colon bacilli. Culture of the heart's blood shows a growth of the staphylococcus in pure culture.

MICROSCOPIC ANATOMY.

Consequent upon the invasion of the tissues of the stomach by the staphylococci, which may be found either in mucosa or submucosa, there develops a circumscribed hemorrhage, then a leucocytic infiltration followed by a necrosis. Later there is a sloughing of the necrotic area. The ulcer formed thereby shows a base either clean or covered with blood. As a rule, the necrosis begins at the free surface of the mucous membrane, and proceeds downward. The glandular tissue immediately about the margin of the ulcer shows little change from normal, although organisms can at times be found in the interstitial areas. The submucosa and mucosa, too, beneath the crater may present a picture of acute inflammation with hemorrhage and reveal masses of staphylococci.

CONCLUSIONS.

The results of the experiments indicate that gastric ulcers resembling those in man can be produced in rabbits and dogs by intravenous injection of the staphylococcus pyogenes. Ulcer develops when the organism injected is of the proper grade of virulence and shows an inherent tendency to localize in the gastro-intestinal tract. Such qualities characterized the staphylococcus freshly isolated from an acutely inflamed human appendix, but the staphylococcus isolated from a case of septicemia showed these qualities only after cultivation in functioning tissue.

In the light of my experimental results, it seems probable that the staphylococcus is responsible for certain cases of gastric ulcer in man. That the organism may be present in gastric ulcer of human beings, is borne out by the work of Cellar and Thalheimer,¹ who found, among other bacteria, the staphylococcus in 7 out of 9 ulcers examined. Owing to a dearth of material for a similar study, I am unable to offer at the present time any statistics as a result of my personal investigation of this phase of the subject.

Many thanks are due to Drs. Paul G. Woolley and William B. Wherry for helpful interest shown throughout the course of this work, to Dr. Joseph Ransohoff, for some of the acute human appendices furnished, and to Mr. Oscar Haude for the pathological preparations and photographs.

¹ Bacteriological and Experimental Studies on Gastric Ulcer. Journal of Experimental Medicine, June, 1916.

THE NEW BOSTON LYING-IN HOSPITAL.—The JOURNAL has in previous issues noted extensively the plans being made to build on Longwood Avenue, near the Harvard Medical School, a new Lying-in Hospital, to provide larger and better accommodations than now afforded by the building on McLean Street. The sum necessary to cover this new building has been subscribed, with the exception of \$75,000.

REMARKS ON THE DIAGNOSIS AND TREATMENT OF GASTRIC ULCER.

BY LOUIS FISCHBEIN, M.D., BOSTON.

A GREAT deal has been said and written about the diagnosis and treatment of gastric ulcer, and the object of this paper, therefore, is, not to make any new contribution to the subject, but merely to emphasize a few points in the diagnosis and the treatment of this important affection.

There have come under my observation, within about eighteen months, twenty-six cases of gastric ulcer, twelve of which were seen within a period of six weeks. Of these twenty-six patients treated, eighteen were men and eight women, their ages ranging from twenty to sixty-two years.

SYMPTOMS AND DIAGNOSIS.

Pain two to four hours after meals was a very constant feature, and present in all these cases, but it varied greatly in intensity, character and location in different patients. It was of a boring, stabbing character in some cases, shooting from the epigastrium through the back between the scapulae, in others it was in the form of cramps across the abdomen, with or without pain or pressure in the back, while in still other instances it was more of a painful pressure in the epigastrium, or in the back, or in both. The pain was temporarily relieved, in some cases, by the taking of food or bicarbonate, in some by lying down or by changing the position from the left to the right side, or vice versa; in some cases cramp-like pains came on during the night, awaking the patients from their sleep.

Tenderness on pressure was not a marked symptom; when present it was found in the epigastrium, or between the epigastrium and umbilicus, and only rarely in the back, left of the eleventh dorsal vertebra, as described by Boas. In two cases both the pain and the tenderness were located in the right umbilical region, giving rise to a suspicion of appendicitis (which was actually diagnosed in one of these cases and the appendix removed, but the pains did not cease).

Vomiting of blood did not occur in any of these cases; vomiting of food occurred occasionally in three patients.

Pyrosis: this was present at times in all of the cases, and in some it preceded the pain by years.

Stomach contents: hyperacidity was found in most of the cases, the total acidity ranging from 60 to 130.

Food retention: the motility of the stomach was not determined, as the patients could not be persuaded to swallow the stomach tube twice, and since vomiting was of rare occurrence, the assumption was justified that food retention, if

present, would be due to spasm and not to pyloric stricture.

Constipation was present in the majority of cases; it was rather surprising that some patients with severe gastralgias had normal daily evacuations.

X-ray examination was made in three cases, in two with negative results, and in the third it was questionable whether the examination showed ulcer or adhesions.

Loss of weight, in spite of a good appetite, was present in all cases.

Chronicity and periodicity of the symptoms was a marked feature in all cases, the symptoms having lasted from 2 to 7 years (in one patient 12 years, in another patient four months only). All patients claimed that there were weeks, and even months, in which they were free from pain, but whether they were also, in these intervals, free from slight gastric disturbances, could not be determined.

Occult blood in the stools as demonstrated by the guaiac test was present in all cases, and is to my mind the most reliable and the most characteristic symptom of gastric ulcer. Naturally, blood in the stools may also mean gastric cancer, but there are usually other signs and symptoms to differentiate between these two affections. Occult bleeding is apparently not present in gall-bladder disease, for in eight cases of gallstones in which the stools were examined within twenty-four to forty-eight hours after the attack the guaiac test was found negative. This "occult blood in the stools, when other sources of bleeding can be excluded, is, therefore, to my mind, pathognomonic of an ulcerative lesion in the gastro-intestinal tract, and in the absence of signs pointing to cancer, of gastric ulcer." All other signs and symptoms, single or combined, while suggestive, are not characteristic and are not sufficient to diagnose the disease with any degree of certainty. The typical hunger-pains, the gastralgias, the pyrosis, the vomiting, are certainly very suggestive, but are not present in all cases of gastric ulcer, and are, on the other hand, present in functional disorders of the stomach when these disorders are a part of a general neurosis. One would naturally hesitate over the diagnosis "neurosis" in the presence of severe gastric symptoms, the more so as many of these "neuroses" have in later years turned out to be gall-bladder disease, but that these severe symptoms do occur has been demonstrated to me, at least in one instance, in the most unique and absolute manner. It was in the case of a young woman with severe gastric pains, hyperacidity, and vomiting, and as an x-ray examination proved negative, and the therapeutic measures directed towards the stomach proved of no avail, a latent ulcer was assumed and the patient operated upon, but nothing abnormal was found, either in the stomach or in the gall-bladder; later, when treatment was directed towards the

general nervous condition, the pains ceased, and have not returned in about four months.

Some years ago, when there appeared a new edition of Hemmeters's "Diseases of the Stomach," a reviewer in one of the medical journals criticized the author for not mentioning that the pain in gastric ulcer is always worse when the patient is lying on his left side. I have since then carefully inquired into that symptom, and have found that it is as often absent as present.

Tenderness on pressure is emphasized by many authors, but I am convinced that this symptom is as frequent in gastric neurosis as in ulcer, and the same is true of hyperacidity. In fact, I am certain that the examination of the stomach contents yields practically no useful information, and in the presence of occult blood in the stools, it can be entirely dispensed with.

The occult bleeding is not only the most valuable sign in ulcer, but it is also the earliest sign of cancer, and in three cases of this latter disease the diagnosis of cancer was made months before any abnormalities could be demonstrated by the x-ray. Of course, none of my cases of gastric ulcer came either to operation or to autopsy, and the correctness of the diagnosis might, therefore, be questioned, but this is true in numerous other diseases where the clinical diagnosis is considered reasonably certain, so that one can, without being dogmatic, affirm in the disease under consideration: *Occult blood in the stools, in conjunction with chronic indigestion, signifies ulcer, either of the stomach or of the duodenum.*"

As to the performance of the guaiac test, I follow the method originally described by Boas, but instead of old oil of turpentine I use hydrogen dioxide. The precautions to be taken must be negative as well as positive. Meat must be excluded for at least two days, so that we can be sure that the blood found in the stools does not come from the meat ingested; on the other hand, some indigestible food should be given for the same length of time, on the supposition that if there is an eroded surface in the stomach which is liable to bleed, the heavy diet will cause it to do so and the blood will be detected in the stools.

TREATMENT.

The treatment of these cases and of a few others, not here included, is a modification of the original von Leube-Zimssen method, and its cardinal principles are: (1) rest in bed; (2) a bland easily digestible diet; (3) hot applications to the abdomen; and (4) alkalis to neutralize or to reduce the gastric acidity.

Rest in bed for at least ten days is absolutely essential, and this was forcibly illustrated in the case of two of my patients who, without rest in bed, carried out to the letter the dietetic and the medicinal measures, had blood in the stools after five weeks of treatment, in spite of increase of weight and of the disappearance of pain. If circumstances permit, or if blood is found in

the stools after ten days, rest in bed for from three to four weeks is insisted upon.

DIET.

Feeding per rectum is illusory in the light of the newer physiology, which teaches that the stomach is practically never at rest. It might, however, be tried after a recent gastric hemorrhage, but as this did not occur in any of my cases, feeding was per os from the start.

The first four days a cup of boiled milk, warm, is given every 3 hours. On the 5th day gelatin with sweet cream flavored with strawberry juice is added. On the 6th day, chicken-soup, and one raw egg beaten up with butter, the eggs being increased to four on the 9th day. At the end of the second week, Robinson's barley, mashed tapioca, zwieback, masticated dry, and calves' brains in chicken-soup, are allowed. At the end of the third week, mashed potatoes, mashed rice, and boiled fish without the skin, are added. At the end of the fourth week, tender chicken, finely cut, and lamb chops, and in the middle of the sixth week, broiled steak, roast beef, mashed spinach, mashed carrots or turnips, and bread and butter, are added. The stools are examined, and when no occult blood is found, the patient is discharged, with written instructions as to diet, to be kept for at least three years, and perhaps during the rest of his life.

This diet has not only been uniformly successful in all cases treated, but it has served also in some instances as a diagnostic point between ulcer and cancer. In one case especially, a man 62 years of age, who had never before had any stomach trouble, and whose symptoms began only four months previous to the time when he came under treatment, there was some suspicion of cancer, but the beneficial effects of the treatment proved the diagnosis of ulcer beyond any possibility of doubt. With less certainty this diet helps to differentiate between gastric neurosis and ulcer, for it will only ameliorate the symptoms in neurosis, and not entirely remove them, as in ulcer.

Two objections will perhaps be made to the diet as here outlined: first, that the quantity of milk in the first few days will cause loss of weight, as it does not supply the calories required by the body at rest; and, second, that there is a large amount of the milk-curdling ferment in the gastric juice, giving rise to firm coagula, which act as solid food, irritating to the ulcer. The first objection has, to my mind, very little weight, for our chief aim is not to fatten the patient, but to cure his ulcer; the few pounds in weight lost in the first week are easily regained in the third, and at the end of the cure there is usually an increase of a few pounds over the original weight. The second objection may, perhaps, be true in theory, but is not so in practice, as the milk was readily taken and well borne by all patients, even by

those who insisted that milk never agreed with them. The only disagreeable feature about the milk is that it may at times cause diarrhea, but this is of no moment, as it disappears after a few days and does not necessitate an interruption of the cure.

Hot applications to the abdomen: How much these applications accomplish is difficult to state; they certainly exert a beneficial influence over the subjective symptoms, and by keeping the patient on his back they perhaps indirectly assist in the healing of the ulcer.

Medicinal treatment: Some recent observers believe they have demonstrated that in the rabbit the gastric juice does not prevent the healing of the ulcer, and the natural implication is that the same must be true in man. It requires no argument, however, to prove that conditions in the rabbit are not identical with those in man, and that the results of experiments on the former are not directly applicable to the latter. In many cases of purely functional disorders of the stomach with normal acidity, the symptoms are often relieved or improved by the administration of alkalies. There is apparently, in those cases, a hyperesthesia of the gastric mucous membrane, which reacts abnormally to even normal stimuli, hence the beneficial effect of the alkalies. The same must be true in gastric ulcer where there is, undoubtedly, a pronounced hyperesthesia of the gastric mucous membrane, and the employment of alkalies in this disease rests, therefore, on a fairly scientific basis, for if they do not fulfil the *indicatio morbis*, they completely fulfil the *indicatio symptomatica*. One-half teaspoonful of sodii citrici and magnesi ustae is given, one-half to one hour after each feeding, and when constipation is present a little pulv. rad. rhei. is added. Bismuth subcarb., one heaping teaspoonful in a glassful of water, is given mornings on an empty stomach, in the traditional belief that it forms a protective covering over the ulcer, no evidence having been adduced to prove the fallacy of this belief.

As mentioned above, the treatment here outlined has been uniformly successful, as all of my patients have gotten rid of their symptoms and of the occult blood in their stools; the question, "how long will they stay well?" I am, of course, not prepared to answer, yet there is sufficient reason to believe that the cure may be permanent. The earlier statistics of von Leube, Boas, and Ewald, according to which the ulcer recurs in 30-50% of the cases treated, cannot be taken on their face value, for various reasons, one of the reasons being that prior to the occult blood test there were no objective means to determine whether the ulcer was actually healed; they relied entirely upon the disappearance of the subjective symptoms,—which, as we know at present, does not signify a complete cure,—so that many of their relapses were more apparent than real. Furthermore their figures were

mostly based upon hospital patients, who are much more apt to discard dietetic injunctions than is the case with private patients. Again, the intervals of freedom from pain, which are encountered in many cases, suggest a tendency in the ulcer to heal spontaneously. It would appear, then, from all these considerations, that with a proper diet, kept for years, simple, uncomplicated gastric ulcer may be permanently cured.

NOTE.—When the guaiac test is negative ulcer can be safely excluded, provided the proper precautions are taken. The diet, for about two days previous to the collection of the stools, must contain some heavy indigestible articles of food, and the stools examined must be solid, as a diarrheic stool is unreliable and misleading. Now, if no blood is found, ulcer can with great certainty be excluded. The course and the progress of cases in which ulcer was excluded have convinced me that the guaiac test is as valuable when negative as when positive.

PREPARATION OF VEGETABLE PROTEINS FOR ANAPHYLACTIC TESTS.*

By R. P. WODEHOUSE, AND J. M. D. OLMSTED, BOSTON.

[From the Medical Clinic of the Peter Bent Brigham Hospital, Boston.]

In a previous paper by one of the authors† it was shown how preparations convenient for use in skin tests in the diagnosis of asthma and other anaphylactic diseases could be made from some of the vegetable foods. Detailed descriptions were given for the preparation of most of the more commonly used cereals, nuts and other seeds, roots and tubers, fruits, and leaves and stems. Since these preparations have been found very satisfactory, the list has been considerably extended.

Briefly, the method employed is as follows: If the food in question is generally used in a cooked form, it was boiled in water, somewhat as if prepared for the table. The supernatant liquid was decanted, the liquid remaining in the pulp squeezed out, and the whole extract strained through cheese cloth. If, on the other hand, the food is generally used in the raw form, it was simply ground fine in a meat chopper and allowed to soak in two or three volumes of water for twenty-four or forty-eight hours (using toluol as a preservative). The procedure from this point on was the same in both cases. The extract was evaporated as dry as possible on a hot water bath (about 50° C.) with the aid of an electric fan. It was then redissolved in as

* These preparations were made for Dr. Fritz B. Talbot, Boston, and for the "Studies on Bronchial Asthma" at the Peter Bent Brigham Hospital.

† Wodehouse, BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxv, No. 6, pp. 195, 196.

small an amount of water as possible, and precipitated by adding three volumes of 95% alcohol. Usually this gave a good precipitate, which could be removed by centrifuging, and when washed in a mixture of acetone and ether (4-1) and pure ether, could readily be dried in a desiccator. When desiccation was complete a friable substance was obtained which could be ground easily to a powder, and was always soluble in water or in dilute alkali (approximately 1% KOH).

The list of "protein preparations" made by this method now embraces the following:

Blueberries	Cantaloupe
Plums	Watermelon
Pears	Radish
Strawberries	Peanuts
Tomatoes	Cabbage
Peaches	Cauliflower
Grapes	Onions
Dates	Rhubarb
Figs	Sago
Grape fruit	Asparagus

A detailed description of each of these is unnecessary because the general method applies, without modification, to nearly all cases. The extract from cantaloupe, strawberry, blueberry and grape, however, instead of forming a good precipitate with 95% alcohol, became syrupy or gummy, and had to be triturated or macerated in hot absolute alcohol, then ground in acetone and ether to bring about complete desiccation.

In the case of tomatoes only an extremely small amount of the finished product was obtained from a very large amount of seed-free pulp. Therefore the seeds were dried and ground in a mortar, and from them a fair amount of protein was obtained by the usual method.

In the case of grapefruit, expressed juice was found to be strongly acid, and so was neutralized by adding KOH. At neutrality a flocculent white precipitate was formed which, upon being centrifugalized, floated to the surface, whence it was removed, washed in alcohol, and dried in the usual way. When the filtrate from this was examined, no further precipitate could be obtained, and as the filtrate was shown to contain no protein it was discarded. A watery extract, made by grinding and soaking the remaining pulp, was neutralized, made faintly alkaline and allowed to stand, when it took the form of jelly, and still retained this form, even when neutralized. When this was washed in alcohol, ground with absolute alcohol, acetone and ether, and dried in the desiccator, an extremely small amount of gray powder was obtained. Upon investigating the seeds it was found that a fair amount of protein could be extracted from them in the usual way.

In the case of watermelon a pale yellow juice was strained out by pressing the ground pulp in a muslin bag. After filtering, this was dried on the water bath, and the residue redissolved in as small an amount of water as possible. This

gave a good precipitate when added to three volumes of 95% alcohol. When this precipitate was removed and dried in the usual way a grayish powder was obtained which is called "Watermelon preparation A" to distinguish it from the following. When the alcohol by which this had been precipitated was examined, it was found to give a precipitate upon further addition of alcohol, so 1/5 volume of 95% alcohol was added, and the whole allowed to stand for two days, when a large amount of white crystalline substance settled out. This was removed, washed and dried in the usual way, and is called "Watermelon preparation B." The chemical nature of this substance has not been determined. It is not of a protein nature for, although it gives the xanthoproteic reaction, it does not give the biuret nor Millon's test.

Protein tests were applied to all of these preparations. In none of those made from fruits, except from dates and figs, could protein be detected by chemical means. In the preparations from dates and figs, the protein could be demonstrated, and their reactions with phosphomolybdic and phosphotungstic acids showed them to be of the nature of peptones or proteoses. No protein could be detected in the preparations from cantaloupe or sago, and only minute amounts could be found in "Watermelon A," radishes and rhubarb. In the others, however, the presence of protein was shown both by the color tests and by the precipitation reactions, which latter showed that it existed in these preparations usually in the form of proteose or peptone.

SUMMARY.

The method described in an earlier paper for obtaining "protein preparations" suitable for use in making skin tests has been extended to include most of the commonly used vegetable foods. The preparations made from the fruits, in most cases, do not contain protein in demonstrable amounts, but those made from other vegetable foods generally consist largely of protein.

AN IMPROVED BLOOD TRANSFUSION TUBE.*

By WILLIAM REID MORRISON, M.D., BOSTON.

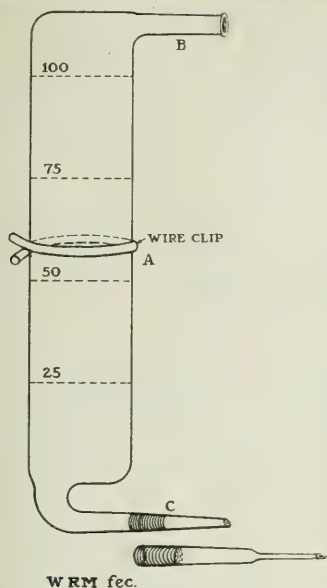
Assistant in Anatomy, Harvard Medical School.

(From the Laboratory of Surgical Pathology, Harvard Medical School.)

AFTER using the paraffin-coated glass cylinders of Kimpton and Brown, at the Boston City Hospital, and later at base hospitals in France, it occurred to the writer that certain alterations in the tube would be of advantage.

The accompanying drawing represents the new model tube.

* Demonstrated at a meeting of the East Boston Medical Society, February 27, 1917.



For convenience two sizes are made, according to the amount of blood to be transfused. One cylinder is of three hundred and fifty cubic centimeter capacity, four centimeters in diameter and thirty centimeters long, primarily for adult patients. The smaller size, three centimeters in diameter, and twenty centimeters in length, of one hundred cubic centimeter capacity, is for infants especially.

The tube consists of a good quality glass cylinder, "A", with a tube, "B", four millimeters in diameter, placed at the junction of the side and end of the cylinder. A cannula, "C", is situated at the other end of the cylinder. This cannula tapers from a tube of four millimeters to two millimeters diameter, at the tip, for the large cylinder, and the smaller cylinder cannula tip measures one millimeter in diameter.

The standard glass tubing manufactured varies slightly in width, therefore each cylinder is carefully graduated separately.

Each completed cylinder has an excess capacity of about twenty-five cubic centimeters to allow the surgeon a margin of safety in transfusing fixed amounts of blood, and also to prevent air embolism.

The tube "B" is for the outflow of air during the filling of the cylinder with blood. The donor's blood pressure fills the cylinder, the blood flowing in through the cannula "C". If a needle is attached to the cannula "C", a suction bulb may be connected with the tube "B", to aid the flow of blood in through the needle.

There is a ground glass collar on the cannula for the attachment of Vincent's needle particularly.

To empty the cylinder, a cautery bulb, or bulb syringe, and rubber tubing is connected to "B", and air is forced into the cylinder, driving the blood into the recipient's veins.

A safety-valve attachment to the rubber tubing may be used, such as is found in blood pressure apparatuses, for the release of air pressure.

The position of "B" is to prevent loss of blood after filling the cylinder, when the surgeon tilts the tube on its side. The tube "B" points in the same direction as the tip of the cannula "C", for the same reason.

The cylinder "A" is not made of heavy bottle glass, because of the danger of cracking the glass with change of temperature in cleaning the tube.

The cannula "C", for insertion in the blood vessels of donor and recipient, is of Vincent's model, which differs from Kimpton-Brown's in that it is simpler, and has no right-angled turn in it, which the writer deems unnecessary.

The cannula is attached to the side of the base of the cylinder, and runs across its greatest diameter, thereby affording protection to the cannula, which is lacking in Vincent's tube.

An adjustable wire clip holds the cylinder in any position on the table, thus lessening the danger of breaking the cannula, or tube "B", if the cylinder rolls from side to side.

The cork-stopper in the Kimpton-Brown and Vincent tubes, and their modifications, is eliminated.

Its disadvantages are: first, when coated with paraffin, the stopper may fall out of the cylinder to the floor, causing the surgeon to lose most of the blood in the cylinder, if the tube is not held upright, and his finger slips off the cork; second, if the tip of the cannula is against the wall or a valve in the vein too tightly, air pressure from the cautery bulb may force out the stopper, which rolls on the floor, and adequate air pressure is then impossible, even though the operator's hand is firmly applied to the opening; third, it is doubtful if any cork stopper can be thoroughly sterilized; fourth, glass cylinders vary in size, and even though three different-sized stoppers be carried by the manufacturer, certain cylinders prove to be too large, or too small, for any of these stoppers.

The only advantage a stopper at one end of the cylinder has is easy access for cleaning, but very hot soap solution or hot alcohol readily cleans the tube.

Rubber and glass stoppers can be sterilized more readily, but they, too, have the disadvantages of the cork ones, and are relatively quite expensive.

Safety-valve glass tubes, controlled by the surgeon's finger, have been used in the stoppers to avoid air embolism, in addition to the tube "B" for the cautery bulb, but merely pinching the rubber tube of the cautery bulb, and removal

of the nearly-emptied cylinder from the vein, prevents air embolism.

The glass cylinder is, of course, cleaned, and sterilized in an autoclave; then all moisture is driven out of the tube by heating over a Bunsen burner, for if there is any water left inside, a good coating of paraffin is impossible. In aseptic hands, the cylinder and needle, warmed over the flame, are coated with Vincent's mixture, or with "parowax," which is sterilized and melted on a water bath, or over a Bunsen burner, and poured in readily by a heated medicine dropper, or pipette.

I wrap my tubes, clip, and needle in one layer of folded sheet wadding, held in position by tape, and enclosed in a towel and taped. An extra towel is, in turn, wrapped around the inner towel, and held by tape, instead of pins or rubber bands, which are less efficient. The cylinder and coverings are sterilized in an autoclave, then the outermost towel is removed by an assistant, and the surgeon aseptically removes the cylinder from its inner coverings; on a sterile sheet, and coats the cylinder as above. After cooling, the tube is returned to its sterile coverings, and the outermost towel is reapplied as it was taken off.

Sterile salt solution may be used as a coating for the tube, if no paraffin mixture is on hand.

After a transfusion, the cylinder may be cleaned of blood readily by filling it with cold water, and shaking until any clots are broken up. A stream of water may then be passed through the cannula "C," forcing out any clots through the tube "B," holding the cylinder upright.

The paraffin mixture is removed by immersing the cylinder in a cold soap and water solution, and gradually heating, by the addition of very hot water, until an emulsion of the mixture is made. The paraffin is then forced out of the cylinder by a stream of hot water as above mentioned.

Alcohol may be poured into the tube conveniently by a medicine dropper or pipette, and heated over the flame, readily dissolving any paraffin remaining.

Through the courtesy of Dr. Edward H. Nichols, facilities were afforded for experimental work in the Laboratory of Surgical Pathology. Dr. Woody kindly assisted the writer in the work.

I wish to acknowledge many valuable suggestions given me by Dr. Walter R. Bloor of the Department of Biological Chemistry, Harvard Medical School, and by Mr. Wiggin of the Victor Electric Corporation of Cambridgeport.

Since writing this article, I have successfully transfused, by means of the small-sized tube, a private case of hemorrhagic disease of the new born, in a child one day old. The median basilic vein of the father was isolated by dissection, and the blood was removed directly by means of the cannula, then injected into the child through

the anterior fontanelle into the superior sagittal sinus, by means of Vincent's needle.

The larger sized tube has recently been used satisfactorily by Dr. F. B. Lund and myself, in a case of hemorrhage from the stomach in an adult, at the Boston City Hospital.

Book Reviews.

The Medical Clinics of Chicago. Vol. 2, Nos. 1, 2, and 3, July, September and November. Philadelphia: W. B. Saunders Company. 1916.

A dozen or more men contribute to these three numbers of the Medical Clinic some very interesting case reports. The case reports are enlivened by a varying amount of correlated information concerning the disease discussed. The cases are carefully selected and are of considerable interest. The informal method of presentation will doubtless appeal to many practitioners who want a running commentary on a medical case rather than exhaustive discussion of the disease.

Public Health Nursing. By MARY SEWALL GARDNER, R.N. New York: The Macmillan Company. 1916.

Within recent years the rapid development of the public health nursing movement has led to the formation of an entirely new department in the nursing profession. This monograph by Miss Gardner is perhaps the first comprehensive presentation in English of the history of this development, of the technique, method and organization of visiting nursing agencies and organizations, and of the various branches which have developed within the department of public health nursing, dealing with special aspects of the subject such as tuberculosis, child welfare, school nursing, mental hygiene, industrial nursing and medical social service. The author's statements on all these subjects are based on her own experience as superintendent of the Providence (R. I.) District Nursing Association. There is an introduction by M. Adelaide Nutting, professor of nursing and health of Columbia University, pointing out the relation of public health nursing to early forms of nursing, and to other factors in the movement for community health and hygiene. An appendix presents a chronicle history of the development of public health nursing from the time of the Knights Hospitaller. There is also an account of the national organization for public health nursing of which the author of this excellent compendium is president.

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THE FOOD VALUE OF MILK.

A GREAT deal has been said and written about the food value of milk—about the number of food units it contains, its caloric value, and about its great digestive and absorptive properties. Yet an analysis of all the facts bearing upon the value, and especially the availability, of a food like this does not entirely justify its wide use as a beverage, particularly when it is considered that the value of milk is largely modified by dangers almost peculiar to it from bacterial contamination at the source, or from pathological changes taking place in it during transportation.

Biologically, milk is the ideal food for the young of all mammalia, whether from the standpoint of quantity, concentration or quality. It is particularly ideal, because Nature intended that it be consumed at the source of production by its young. Because so very perishable, it

could never have been intended for transportation as such for long distances and under the many adverse conditions incident to transportation. Yet milk has been largely subverted from the young to the use of the adult, as well as to the manufacture of the many milk products. It is the great adult demand for this food that has made it so expensive and so difficult to obtain for the young. In order to reach this large demand, it has been necessary to exercise great care in production and to haul great distances under expensive and far from satisfactory methods of preservation. Unless this is carried out, milk can become a dangerous poison, being a culture medium of highest quality. Nevertheless, even with all the care exercised, the ever-present danger from milk cannot be entirely eliminated.

Unless, therefore, milk is an indispensable food for adults and must be obtained for them despite difficulties in production and transportation, as well as cost, there is little justification in its extended use by adults to the prejudice of the young.

Although milk is a well-balanced food, only about 11% of the best milk is solid food in solution. In order to obtain this amount of food it is necessary to run through the system about 89% of water—a highly bulky and wasteful method of feeding. Besides, even this small amount of food must be taken in a highly perishable and always potentially dangerous form. Moreover, the elimination of the large quantities of fluid necessarily taken with a generous milk diet puts a heavy tax on the organs of elimination—particularly the glomeruli—and becomes a positive contraindication in nephritic as well as circulatory conditions, where milk is so often erroneously prescribed as "light" diet. In health an adult has little reason for consuming a highly digestible food, while in disease it may be objectionable for the reasons already stated, as well as in conditions where the digestive apparatus cannot overcome even the normal milk curd.

Except as the intake of large quantities of water has a tendency to increase body weight, milk does not of itself act as a "fattener." Indeed, milk diet alone is often prescribed to reduce weight. On the basis of an adult food ration, very large quantities of milk have to be taken continuously. On the other hand, milk is very poor in mineral matter, especially in iron. Children who are kept on an exclusive milk diet

for a long time become anemic, rickety, and, if the milk is always boiled for safety, have a tendency to scorbutus.

The adult value of the milk products—butter, cheese, cream, etc.—lies entirely in their concentration and small volume. All the food value is represented in the volume consumed. Preservation and transportation of these products represent problems infinitely less than with milk, mainly because of the small volume.

The usual milk scarcity and difficulty with its extravagant cost for the young would be obviated should we demand less milk and more of the milk products. Much of the cost and scarcity is due to losses from improper preservation or production at the source, loss from deterioration in transit, and the cost and difficulty of transporting the small amount of food content in the great water volume. Milk should not be too extensively used as a food by adults. The cost of producing, preserving and transporting the relatively small part of the milk demand of the young would not then be so prohibitive nor present so profound a problem.

MEDICAL PHASES OF THE NEW IMMIGRATION LAW.

THE new immigration law, just passed over the President's veto, is by far the most comprehensive measure yet drawn for the protection of the native population from alien sources of contamination. The medical aspects of this law are especially important in this respect. In the matters of diagnosis the law allows at least as much latitude to the medical officers as would be allowed them in ordinary clinical work. Previously, diagnoses of physical and mental conditions had to be based upon data almost quite beyond that required in medical diagnosis. The result was that exclusion for such mandatory conditions as tuberculosis or mental defect or disease was extremely low when compared with the large number of the alien population inhabitant in public institutions. The public institutions of the various states made frequent and just complaints about this state of affairs. And, while other factors, beside failure to apprehend on entrance, caused this large disproportion between alien and native inmates, yet the factor of failure to exclude on entrance was much the predominant element in this condition.

For example, under the old law, only certain forms of tuberculosis could be certified as such, and then even the tubercle bacillus had to be demonstrated. Even clinically, only a very small number of the positive cases demonstrate the bacillus in the sputum. Under the new law, all forms of tuberculosis receive recognition.

Similarly, the problem of the insane and the mentally defective, and the part the immigrant plays in furnishing new "foci of infection," is now afforded proper weight. It is evident that if the requirements for the certification of the insane at the time of inspection require some overt action or speech, the number of those who can be certified must be very low, whereas the large number of the potentially or even latently insane must escape, but yet succumb to the first adverse condition met with in their new environment, and become a charge upon the public. Likewise, the mentally defective, except the most profound, do not always fail in the still rather crude mental tests thus far devised and set before them, even though the mildest personal contact between the experienced examiner and the subject will detect the inferiority. Moreover, while the defective can be educated to do the simple tests like the Binet-Simon, or its modifications, his actual deficiency nevertheless shines through the thin veneer of training. Under the old law, however, these could not be certified unless they came under one of the three classic divisions of the defective,—the idiot, the imbecile or the moron. Under the new law, the provision calling for the certification and the exclusion of the constitutionally psychopathically inferior, all the potentially or latently defective or insane can be included. There is no doubt that no matter how large the distinctly defective population held under custody, that not considered severe enough for custody but which is, nevertheless, the progenitor of later generations who must be held in custody, is very much larger. It is the augmentation of this large class that this provision in the new law seeks to limit.

In a medical way the much discussed literacy test has a value only because it will undoubtedly blanket out whole classes of the inferior. Even if the illiterate are not by heredity defective, it must be remembered that the exercise of reading and writing is a very important stimulus to the development of the mind. It is for this reason that writing is so important a factor in the training of the mentally defective. In literate

circles, the presence of an illiterate is almost certain to be caused by mental deficiency. Literacy is a factor in general life efficiency and health, so much so that insurance companies refuse to accept illiterates as bad risks.

The diagnosis of the constitutionally inferior is not without difficulty, and to many it may appear as a rather vague medical condition—one too vague on which to base an excluding medical certificate. Yet this same difficulty was encountered when the more definite mental conditions were first certified, but the study of these conditions will soon perfect surer means of diagnosis.

THYMUS DEATH.

FROM time immemorial there have existed refuges for the physician who chose to take advantage of them, at a loss for the diagnosis of an illness or to assign the cause of death. Malaria, grip, "threatened with pneumonia," "threatened with typhoid fever," rheumatism, and many other old standbys, are quoted to the anxious family who wish a diagnosis when the doctor is putting on his overcoat after his first visit. Then, when the young or the old die unexpectedly, he may, in the lack of any definite knowledge, write in the cause of death as meningitis, entero-colitis, bronchitis, chronic myocarditis, arteriosclerosis, or, in the case of children, the most satisfying and mysterious of all, "thymus disease."

This latter diagnosis is particularly apt to be given if a child, whose heart and lungs have been found to be normal, suddenly dies in the early stage of an anesthetic and the thymus is found at autopsy to be enlarged, or if a sudden attack of dyspnea causes death. Then, too, death may occur unexpectedly in the course of some disease not considered essentially dangerous, such as bronchitis, rickets, or a diarrhea. Post mortem then reveals an enlarged thymus and an abnormally developed system of lymphatic glands and follicles; "thymus death" then seems to offer an adequate explanation.

Recently Dr. J. A. Hammar in a Swedish medical journal,¹ describes his post-mortem examinations of sixteen cases of sudden death in infants and children, with especial reference to the relative amounts of cortex, medulla, and inter-

stitial tissue in the thymus glands, and also to the relative and absolute numbers of Hassall's corpuscles in them, for the purpose of verifying the current impression that thymus death is frequently due to an excessive deposit of these in the gland. In all these sixteen cases there was more or less enlargement of the thymus, but in only two cases was there true thymus death, the other cases being due usually to some respiratory condition.

Dr. Hammar has also made extensive investigations into the histology of the normal thymus, and his conclusions are that in cases of sudden death from internal causes in infants and children, the thymus gland is, as a rule, normal, and must be absolved from all responsibility in the matter. We must look, he says, into the endocrine glands generally with more minuteness.

MEDICAL NOTES.

INCREASE IN COST OF DRUGS.—A meeting of the Boston Association of Retail Druggists was held lately at the Massachusetts College of Pharmacy to consider the recent increased rise in the cost of many drugs. Since the outbreak of the European War there has been an average increase of 503% in the cost of all drugs, and individual drugs have increased much more than this, as is evident from the following table:

	INCREASE PER CENT.
Acetanilid	133
Acetphenetidil	1069
Acid benzoic	3155
Citric acid	33
Salicylic acid	357
Tartaric acid	353
Powdered alum	243
Anthpyrine	472
Belladonna leaves	650
Bromide of soda	150
Calomel	203
Carbolic acid	446
Cream tartar	50
Sulphate of atropine	650
Glycerine	195
Naphthalene	233
Oxalic acid	934
Iodide of potash	25
Permanganate of potash	2894
Sulphate of quinine	260
Resorcin	3800
Rochelle salts	147
Salol	333
Saccharin	1483
Saltpetre	300
Benzoate of soda	1844
Salicylate of soda	187
Sugar of milk	166
Thymol	391
Thymol iodide	161
Sulphate of codeine	83
Sulphate of morphine	90

¹ Svenska Läkarsällskapets Handlingar, Stockholm, 1916, xlii, 867.

Arnica flowers	1466
Denatured alcohol	107
Witch hazel	19
Castor oil	100
Phenolphthalein	1300
Carbonate of guaiac	1919
Ichthyol	384
Gum camphor	111
Aspirin	100
Bismuth subnitrate	79
Caffeine citrate	93
Cocaine alkaloid	100
Digitalin powder	3566
Dovers powder	140
Ergot	50
Iodine	91
Iodoform crystals	61
Methyl salicylate	220
Novasprin	66
Bromide of potassium	538
Phenacetine	627
Salicin	233
Quinine sulphate	290
Castile soap	42
Olive oil	25
Cod liver oil	316
Sandal wood oil	233

UNITED STATES CENSUS BUREAU REPORT ON CANCER.—The United States Census Bureau has recently published its long-expected special report on the cancer mortality statistics of the United States registration area and its subdivisions, including the states, counties and principal cities, for the year 1914. The American Society for the Control of Cancer takes a just pride in the completion of this work, which was undertaken at its own suggestion and developed in constant coöperation with the Committee on Statistics and individual members of the board and of the society, who give their advice from time to time. The director of the census in transmitting the report for publication, makes generous acknowledgment of the services rendered by the society and the members of its Statistical Advisory Board.

This statistical monograph on cancer undoubtedly represents the most comprehensive and detailed work of the kind ever published by any government. While making use of an extended classification of organs and parts of the body similar to that which has appeared for some years in the annual report of the registrar-general of England and Wales, the American report goes further in offering for the first time a separation of the statistics according to accuracy of diagnosis as determined by surgical intervention, autopsy or microscopical examination.

The preparation of this report has occupied much of the time and labor of the Census Office for the past three years. The accomplishment justifies the effort, for the work places this country far in advance in the scientific collection and tabulation of the official mortality statistics of cancer. The foremost students of the disease have long agreed as to the importance of statistical investigations in throwing further light on the causes of cancer, and have urged that the official returns show the number of deaths in

full detail according to organs attacked, and with due regard to age, sex and race. In answering this demand the United States Government has made a notable contribution to the scientific study of this formidable and apparently increasing scourge.

The report can be obtained by writing to the Director of the Census, Washington, D. C.

EUROPEAN WAR NOTE.

WAR RELIEF FUNDS.—On March 24 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$544,876.62
French Wounded Fund	208,343.68
Armenian Fund	163,791.17
French Orphanage Fund	88,326.86
Surgical Dressings Fund	80,236.47
Polish Fund	63,551.19
Boston Ambulance Fund	54,859.56
LaFayette Fund	24,689.03
French Phthisis Fund	13,359.04
Friends' Relief Fund	7,052.50

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 17, 1917, the number of deaths reported was 266, against 267 for the same period last year, with a rate of 17.96, against 18.31 last year. There were 36 deaths under one year of age, against 51 last year, and 86 deaths over 60 years of age, against 78 last year.

The number of cases of principal reportable diseases were: diphtheria, 85; scarlet fever, 41; measles, 142; whooping cough, 4; typhoid fever, 3; tuberculosis, 54.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 7; measles, 4; typhoid fever, 1.

Total deaths from these diseases were: diphtheria, 6; measles, 1; typhoid fever, 2; tuberculosis, 29.

Included in the above were the following deaths of non-residents: typhoid fever, 1; tuberculosis, 1.

FOUR-COUNTY BASE HOSPITAL PLANNED.—The American Red Cross has started a proposition for a four-county base hospital of five hundred beds at \$50.00 apiece. Although the beds will be provided largely by individual donors, there is great need of funds for supplies and equipments for the work. Berkshire Chapter has guaranteed to provide 200 beds, leaving 300 for Hampden, Hampshire and Franklin counties. Hampshire and Franklin counties could probably provide 100 beds, but Hampden leaders desire to exceed the 200 of the Berkshire Chapter. Already they have received an offer of 10 beds from one individual, and several of-

fers of single beds. Besides beds, the base hospital will need at least 25 doctors and 50 nurses. Berkshire county has secured the offers of service from seven physicians. The executive committee of Hampden Chapter discussed the proposition to divide the work of the county into two committees, one for civil relief, which will look after the needs of families of absent soldiers, in cooperation with existing relief organizations, and one for military relief, of which Dr. Philip Kilroy was named chairman.

MOBILIZATION OF MEDICAL RESOURCES OF THE STATE PLANNED.—A mobilization of the medical resources of the State, as a preparedness measure, is being undertaken by leading physicians and surgeons of Boston, who have organized under the name of the Auxiliary Medical Committee for National Defense of Boston. Dr. Richard P. Strong, professor of tropical medicine in the Harvard Medical School, has been chosen permanent chairman, and Dr. John Warren temporary secretary. Recruiting will begin immediately for the U. S. Army Medical Reserve Corps, the Medical Officers' Reserve Corps, and the Public Health Service. Among those who have allied themselves with the medical committee are: Dr. E. H. Bradford, dean of Harvard Medical School; Dr. C. F. Painter, dean of Tufts Medical School; Prof. R. P. Strong, director of the School of Tropical Medicine of the Harvard Medical School; Dr. E. H. Smith, dean of the Harvard Dental School; Dr. A. S. Begg, dean of the Harvard Graduate School of Medicine; Medical Director Leach, commanding officer of the Naval Hospital at Chelsea; Surgeon Leys, medical officer of the Charlestown Navy Yard; Col. Williams, surgeon-general National Guard of Massachusetts; Dr. W. L. Burrage, secretary Massachusetts Medical Society; Dr. F. A. Washburn, superintendent Massachusetts General Hospital; Dr. John J. Dowling, superintendent Boston City Hospital; Prof. Harvey Cushing, chief surgeon Peter Bent Brigham Hospital; Dr. C. A. Porter, Dr. F. B. Lund, Dr. Paul Thorndike, Dr. J. E. Goldthwait, Dr. John Baptist Blake, Dr. Robert B. Greenough, Dr. W. B. Cannon, Dr. Reid Hunt, Dr. Roger I. Lee, Dr. Elisha Flagg, Dr. Lincoln Davis, Dr. John Warren.

RING SANATORIUM AND ARLINGTON HEALTH RESORT.—The report of the thirty-seventh year of the Ring Sanatorium and twelfth annual report of the Arlington Health Resort has been issued to the medical profession by its medical director, Dr. Arthur Hallam Ring. A total of 204 patients have been admitted during the past year. In place of the usual elaborate statistics, the report consists chiefly of records of representative cases coming under the care of this sanatorium, with the purpose that the work and manner of treatment may be more clearly un-

derstood by the profession. The facilities and equipment of this sanatorium consist of two separate departments—the Ring Sanatorium, which is conducted as a hygienic institution; and the Arlington Health Resort, which is limited to cases of mild mental illness. There is also operated in conjunction with the establishment, a farm at Billerica, Mass., which has accommodation for eight patients. Plans are being made to build eventually on the farm a colony of bungalows for about one hundred beds, but this spring one building will be erected sufficient for fifteen beds to care for disturbed patients and to relieve the Health Resort at Arlington. A training school for nurses, under the supervision of Dr. Barbara T. Ring, is doing good work in giving specialized training to nurses in mental illnesses.

INFANTILE PARALYSIS IN WHITMAN.—The first case of infantile paralysis that has appeared in the Old Colony District this winter occurred on March 12 in Whitman. The patient, a child of two and a half years, has been removed to the Brookline Contagious Hospital.

SMALLPOX IN WORCESTER.—The third case of smallpox in Worcester was reported on March 13. The patient, a man of thirty-five, lived in the same house with two children who were stricken with the disease the previous week.

CONFERENCE ON ANTI-TUBERCULOSIS WORKERS.—The Instructive District Nursing Association held a conference, at its headquarters, of the anti-tuberculosis workers throughout the State on March 16th. Dr. Eugene R. Kelly, director of the State Department of the Board of Health, presided and delivered an address on Tuberculosis. He stated that the number of deaths from tuberculosis was decreasing, and attributed this to the efforts made by anti-tuberculosis work. He urged that there be no relaxation of this work. Dr. R. B. Greenough followed with an address on cancer, urging that treatment be given at the earliest possible moment. He stated that deaths from this disease are on the increase. Dr. Donald B. Armstrong, executive officer of the Framingham Community Health and Tuberculosis Demonstration, gave an address describing the experiment. Miss Annie Henry Strong of Simmons College and others made addresses.

SOMERVILLE MEDICAL SOCIETY ADOPT RESOLUTIONS.—At a recent meeting of the Somerville Medical Society resolutions were unanimously adopted offering a fully equipped medical company to President Wilson in event of war.

FALL RIVER TUBERCULOSIS HOSPITAL.—A new site for the proposed tuberculosis hospital in Fall River has been decided upon by the board of trustees and a committee has submitted the

decision to Commissioner McLaughlin for the approval of the State Department of Health.

SALEM HOSPITAL.—The Alumnae Association of the Salem Hospital is planning to raise funds for the building of a nurses' home in the new Salem Hospital.

MILFORD HOSPITAL.—Thursday evening, March 15, the Milford Hospital Association held its annual election of officers.

NORTHAMPTON HOSPITAL.—At a recent monthly meeting of the trustees of the Cooley-Dickinson Hospital, Northampton, the announcement was made of the gift of \$400 for the Nurses' Home fund. This third gift caused some discussion as to the advisability of starting plans for the home. The Dickinson Hospital Aid Association, Northampton, desires to increase its membership in order to aid the work which the hospital is doing for those who are unable to pay anything for their treatment.

FRAMINGHAM HOSPITAL.—The Framingham Hospital has received an anonymous gift of \$5000. It has also been announced that the gift of \$4000 from the Frank E. Simpson estate would soon be available, with interest from November, 1915.

FRANKLIN COUNTY TUBERCULOSIS HOSPITAL.—Bids have been submitted for a tuberculosis hospital for the Franklin County Public Hospital, Greenfield.

NEW ENGLAND NOTES.

CONNECTICUT.—The Danbury Hospital has appealed to the legislative committee for an appropriation of \$10,000 annually for the next two years, in order that the hospital may maintain the proper position.

NEW HAMPSHIRE.—The Portsmouth Hospital will receive the sum of \$45,000 for the erection of an annex and operating room, and also the income from certain real estate to pay for the upkeep and running expenses of the same, from the will of John Jacob Pickering.

RHODE ISLAND.—Preliminary sketches are being prepared for a hospital to be built on Chalkstone Avenue, Providence, R. I., for the Providence Homeopathic Hospital.

The annual meeting of the Pawtucket Medical Association was held March 15. Dr. Charles H. Holt, superintendent of the Pawtucket health department, was elected president of the association. Dr. P. W. Hess delivered the principal address.

VERMONT.—The town of Bellows Falls has appropriated \$1000 toward the support of the Rockingham hospital.

The Washington County Medical Society, at its quarterly meeting March 13, made tentative arrangements for a series of three clinical meetings to be held at Barre, Montpelier, and Waterville or Randolph, the first of which will probably be held in Barre or Montpelier, where hospital facilities are available. Papers were read by Dr. Gifford, Dr. C. P. Chandler of Montpelier, and Dr. O. G. Stickney of Barre.

Harvard Medical School.

FELLOWSHIPS IN PREVENTIVE MEDICINE.—Several research fellowships in the Department of Preventive Medicine and Hygiene at Harvard are available for the scientific investigation of food poisoning. The work may at the same time be credited towards the Doctor of Public Health degree.

Candidates should apply to Dr. M. J. Rosenau, Harvard Medical School, Boston, Mass.

THE CUTTER LECTURES.—The Cutter Lectures on preventive medicine and hygiene were given on March 20, 1917, and March 21, 1917, at the Harvard Medical School, by Martin H. Fischer, M.D., professor of physiology, University of Cincinnati. The subject of the first lecture was "The General Physiology and Pathology of Water Absorption by Protoplasm," and the second, "Fats and Fatty Degeneration."

Correspondence.

THE YOUNG BILL: A SECOND REJOINDER.

Everett, Mass., March 9, 1917.

Mr. Editor:—

I wish to preface my second rejoinder to Dr. Rubinow by saying that if my assumption that the omission of "M.D." in his article in the daily press and its appearance in the *MEDICAL JOURNAL* was not intended on his part, that I apologize for my former assumption that it was. I don't think we can blame the printer too much, for the letters I have seen from Dr. Rubinow usually have his name printed on the letterhead with the title of both M.D., and Ph.D. after it.

While in many ways it is a small matter to take up space in a serious journal, yet in medical matters the truth is what medical men want and Dr. Rubinow's assumption that it would require 3566 beds, kept busy all the time, to supply the births of 60% of the entire population of Massachusetts is too large by over 60%. Dr. Rubinow rebuked me once for using too large an estimate of the number to be benefited under the Young Bill, and gave 60% of the population of 3,719,156, or 2,250,000, as a possible basis. Let him stick to his own estimates. While this discussion

is largely academic, if new hospitals were to be built it would be most important. In a way the printer boy played me a trick in my article in the Feb. 22 number, when I was made to say: "The same rate applied to Dr. Rubinow's estimate of 2,250,000 gives 92,978 births for the whole population." This is misleading. If 2,250,000 were omitted it would be what I intended to say. A careful reading of the whole article should have made it clear that 60% of the birth rate of the whole population was 55,786; $55,786 \div 26$ (Dr. Rubinow's divisor) gives 2146; $3566 \div 100\%$ of 2146. This to me seems a matter of simple arithmetic.

Practically, of course, it would take more beds to care for these cases.

I fear I have not made my meaning clear in the past, and I am somewhat embarrassed by the tone of superiority, possibly unintentional, that seems to run through the writings of the proponents of this measure.

The general practitioners of medicine whom I know will look upon the estimates of the cost of medical care promised in the Young Bill as not adequate to do the work as well as it is done now under the conditions as we know them. A change presupposes an improvement. Certainly all maternity cases can't go to the hospital at present, but if the expectant mother is to get a service equal to the best, in her own home, with good nursing and all the rest, the cost must be more than the minimum hospital charge of \$35.00 per case. Either the promises must be cut down more than 60% or the estimate of cost must be increased more than that.

If Samuel Gompers should persist in his declaration made before the Congressional Committee April 11, 1916, that he would rather incite a revolution than submit to this proposed measure of compulsory health insurance, what would your "American professors" say or do then? If any one is interested in reading of this hearing, it is found in the *American Federationist* for May, June and August, 1916.

Most of our patients are workmen and the practice of medicine does not help us to take the aristocracy of brains too seriously. Skilled manual labor, I believe, tends to develop as high a type of American manhood as can be found anywhere on God's green earth. The workman deserves the best medical service possible, but I believe he has a right to decide how and by whom it shall be administered.

GEORGE E. WHITEHILL, M.D.

NATIONAL BOARD OF MEDICAL EXAMINERS. Philadelphia, Feb. 28, 1917.

Mr. Editor:—

The second examination to be given by the National Board of Medical Examiners will be held in Washington, D. C., June 13, 1917. The examination will last about one week.

The following states will recognize the certificate of the National Board: Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, North Carolina, New Hampshire, North Dakota and Pennsylvania. Favorable legislation is now pending in twelve of the remaining states.

A successful applicant may enter the Reserve Corps of either the Army or Navy without further professional examination, if his examination papers are satisfactory to a Board of Examiners of these services.

The certificate of the National Board will be accepted as qualification for admittance into the Graduate School of the University of Minnesota, including the Mayo Foundation.

Application blanks and further information may be obtained from the Secretary, 2106 Walnut Street, Philadelphia.

Very truly yours,

J. S. RODMAN, M.D., Secretary.

"SISTER" MEANING "NURSE."

Boston, March 2, 1917.

Mr. Editor:—

Is there any New England usage corresponding to that in Great Britain? There a member of a body of nurses, especially a head-nurse in charge of a ward, whether or not "in religion," is called "sister"; for instance, "Surgical Nursing and Dressing" (by C. P. Child, London, 1916) is "dedicated to the Sisters and Nurses of the Royal Portsmouth Hospital." The earliest quotation in the New English Dictionary (ix, p. 106) is dated 1873, but a letter in (London) *Notes and Queries* for Feb. 3, 1917 (12 series, Vol. iii, p. 89) gives a quotation of 1731 (the St. Bartholomew's Hospital resolving that annual payment be made to "..... the sisters of all the other wards, £30, nurses, £20.") and says: "but 'sister,' from the manner in which it was employed, must have been in common use long even before 1731." The distinction between grades of nurses is naturally ignored by British Tommy and Jack in the present war; thus a book of this year, being a collection of tributes of gratitude by sailors and soldiers, is entitled "Thank You, Sister."

ALFRED ELA.

APPOINTMENTS.

Dr. Thomas B. Smith, of Lowell, has been appointed medical examiner for the fifth Middlesex District to succeed the late Dr. Joe V. Meigs. He has been a practising physician in Lowell for the past 23 years, and has been assistant medical examiner for the district since January 22, 1913.

Dr. Joseph W. P. Murphy, of Peabody, has been appointed a member of the visiting staff of the J. B. Thomas hospital, Peabody.

Dr. Isaac G. Rosenberg, of Dorchester, has been re-appointed trustee of the Children's Institutions Department.

Dr. William H. Blanchard, of Charlestown, assistant surgeon of the Fifth Regiment, has received an appointment as surgeon at St. Elizabeth's Hospital.

Dr. James E. Waters, bacteriologist and physician of the Board of Health, of Gardner, has been appointed visiting physician of the David Parker Hospital.

The Board of Health in Greenfield has created a new office this year, medical agent, to which Dr. Clara M. Greenough has been appointed. This officer will have charge of all quarantines and other detail work and the general supervision over all cases of contagious disease taken up by the board.

MARRIAGES.

DR. ALLEN GREENWOOD of Waltham was married, on March 8, to Miss Hope Hazel Whipple of Pawtucket, R. I.

DR. CHARLES HAMMETT ROGERS, Newport, R. I., was married on March 7 to Mrs. Victoria Ragsdale Darrah of Battle Creek, Mich.

DR. MARIAN HAGUE REA, a practising physician at the Boston Psychopathic Hospital, was married on March 2 to Dr. Baldwin Lucke, a pathologist at the University of Pennsylvania Medical School, in Philadelphia. Dr. Rea will retain her maiden name.

DR. EARLE LATTIMER JOHNSON, of Pittsfield, was married recently to Miss Henrietta Ferris of Albany. Dr. Johnson is an alumnus of Tufts College.

DR. HERMAN M. ADLER, formerly associate professor of psychiatry at the Harvard Medical School and director of the Psychopathic Hospital, was married on March 17, to Miss Frances Porter at Hubbard Woods, Ill. Dr. Adler is now head of the psychopathic department of the Chicago Juvenile Court.

NOTICE.

HARVARD MEDICAL SCHOOL.—The Cutter Lecture on Preventive Medicine and Hygiene by Ludvig Hektoen, director, Memorial Institute for Infectious Diseases, Chicago, on A Discussion of Poliomyelitis in the Light or Recent Observations, will be given Tuesday, April 3, 1917, at the Harvard Medical School, at 8.15 p.m.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston, and be free to the medical profession and the press.

All members of the classes in the Medical School, the medical profession, the press and others interested are cordially invited to attend.

SOCIETY NOTICES.

ESSEX SOUTH DISTRICT.—The fifth regular meeting of the Essex South Medical Society will be held at the Danvers State Hospital, Thursday, March 29, 1917, at 3 p.m.

Dr. MacDonald, the Superintendent, has arranged a special program and clinic for the Society, an outline of which follows:

1. General Statement. Dr. John B. MacDonald.
2. A Consideration of the Arterio-sclerotic and Senile Psychoses. Dr. William J. Thompson.
3. Symptomatology and Diagnosis of Organic Brain Disease—Brain Tumors, etc.
4. Pathological Résumé. Dr. Lawson G. Lowrey.
5. General Discussion.

DR. E. POIRIER, *President*.

DR. H. P. BENNETT, *Secretary*.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-eighth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, March 30, 1917, at 8.15 p.m.

The following papers will be read:—

1. "Studies in Infant Feeding: The Mineral Constituents of Milk." Henry I. Bowditch, M.D., and Alfred W. Bosworth, Boston.
2. "Anemia of the Newborn." Karlton G. Percy, M.D., Boston.
3. "Nephritis in Childhood, with Especial Reference to Functional Tests." Lewis W. Hill, M.D., Boston.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*.

RICHARD M. SMITH, M.D., *Secretary*.

RECENT DEATHS.

EDWARD S. PARKER, M.D., house physician in Memorial Hospital, Pawtucket, R. I., died recently at his home in that city. Dr. Parker was born in Derby Line, Vt., and graduated from the Harvard Medical School. He was a member of the Rhode Island Medical Society and the Pawtucket Medical Association. He is survived by his widow and one son.

THOMAS EDWARD CUNNINGHAM, M.D., died at his home in Cambridge, February 27, 1917, aged 66 years.

He was born in Prince Edward Island, Jan. 5, 1851, was a graduate of the Harvard Medical School in 1883, had been a fellow of the Massachusetts Medical Society since 1877, and was physician to the Holy Ghost Hospital for Incurables from 1895 to 1900. He is survived by a son who is a physician.

DR. FRANK J. HOGAN, who died in St. John, N. B., March 8, was a graduate of Harvard Medical School in 1908. He practised in Bridgeport, Conn., for two years. He went from there to St. John, N. B., where he had attained considerable success. His death occurred after a brief illness from pneumonia.

DR. GEORGE C. BLAISDELL, who died at his home in Contoosook, N. H., March 5, was born in Goffstown, Nov. 23, 1844. He was graduated from Harvard Medical School in 1867. He is survived by two brothers.

DR. JUSTICE C. FRENCH, who died in San Diego, Cal., recently at the age of 65, was born in Harwick, Vt. He was graduated from Harvard Medical School in 1875. He is survived by his wife.

DR. JOSEPH TAYLOR, who died at his home in Manchester, N. H., on Saturday, March 10, was born in Dublin, N. H., August 11, 1860 and was graduated from Dartmouth Medical School in 1894. He first practised medicine in Acworth and before coming to Manchester practised for a time in Bedford. He has resided in Manchester for sixteen years. Apoplexy is given as the cause of his death. He is survived by his widow, two daughters and two brothers.

DR. ARTHUR ELLSWORTH MERRILL, a Fellow of the Massachusetts Medical Society, dropped dead in the gymnasium of the Somerville Young Men's Christian Association while playing basket ball, March 17. Dr. Merrill was born in Parsonsfield, Maine, 51 years ago, was a graduate of Bowdoin College and the Long Island College Hospital, and had been prominent in athletics and in church activities in Somerville, where he had practised for twenty years. He is survived by his widow.

DR. HENRY L. COIT, well-known as a pediatrician and a leader in the certified milk movement, died at his home in Newark, N. J., on March 13. Dr. Coit was born in 1854, in New Jersey, the son of Rev. John Summerfield Coit, and received his early education in the public schools of Newark. In 1876 he graduated from the New York College of Pharmacy and later from the College of Physicians and Surgeons of New York. He returned to Newark and began practice in that city. In 1893 he organized the first medical milk commission in this country and was first president of the American Association of Medical Milk Commissions, an association with branches in twenty-three states, one in Canada and several in Europe and Asia. He was president of the International Society of Goutte de Lait, with headquarters in Budapest.

Dr. Coit was a Fellow of the American College of Physicians, Inc.; a member of the American Pediatric Society and founder of the branch of that organization in New Jersey; a member of the New Jersey and the Essex County medical societies and of the Practitioners' Club of Newark; member of the Society of Colonial Wars, of the Essex Club of Newark and of St. John's lodge, of the Masons, of Newark.

He is survived by a widow, three daughters and one son.

DR. OCTAVIUS KING YATES, of West Paris, Me., died on Sunday, March 18, from a paralytic shock. He suffered a shock about two years before which paralyzed his lower limbs, but his mind remained bright and keen. He was about 87 years of age. He was graduated from the Medical School of Maine, at Bowdoin College, in 1871. His widow survives him.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

April 5, 1917

ADDRESS	EDITORIALS
HISTORY OF MILITARY MEDICINE AND ITS CONTRIBUTIONS TO SCIENCE. <i>By Major Chamberlain, U.S.A.</i> 479	ADEQUATE MEDICAL PREPAREDNESS..... 508
ORIGINAL ARTICLES	RENEWED ACTIVITY IN THE CANCER CAMPAIGN..... 509
ECLAMPSIA AT THE BOSTON CITY HOSPITAL: A REVIEW OF THE CASES OF TWENTY-THREE YEARS. <i>By Ernest Boyen Young, M.D.</i> 486	INTENSIVE DIAGNOSTIC METHODS..... 510
REMissions IN LEUKEMIA PRODUCED BY RADIUM IN CASES COMPLETELY RESISTANT TO X-RAY AND BENZOL TREATMENT. <i>By Thomas Ordway, M.D., Albany, N. Y.</i> 490	THE VERGE OF WAR..... 511
A METABOLISM STUDY OF A CASE OF LEUKEMIA DURING RADIUM TREATMENT. <i>By Arthur Knudson, Albany, N. Y., and Theodore Erdos, Albany, N. Y.</i> 503	REGISTRATION OF PHYSICIANS..... 511
BOOK REVIEWS	MEDICAL NOTES..... 512
A Reference Hand Book of the Medical Sciences. Edited by Thomas Lathrop Stedman, A.M., M.D..... 507	HARVARD MEDICAL SCHOOL
Care of Patients Undergoing Gynecologic and Abdominal Procedures, Before, During and After Operation. <i>By E. E. Montgomery, A.M., M.D.</i> 507	REPORT OF DEAN OF HARVARD MEDICAL SCHOOL..... 516
	CORRESPONDENCE
	COMMITTEE ON ACCURACY OF CERTIFIED CAUSES OF DEATH. <i>H. Emerson, M.D.</i> 516
	AN ANECDOTE OF MEAD AND RADCLIFFE. <i>William Pearce Cowes, M.D.</i> 517
	MISCELLANY
	NOTICES, APPOINTMENTS, RECENT DEATHS, ETC..... 518

Address.

HISTORY OF MILITARY MEDICINE AND ITS CONTRIBUTIONS TO SCIENCE.

BY MAJOR CHAMBERLAIN, U.S.A.

I.

THE use of arms, however primitive, for offense or defense, must be almost coeval with the appearance of man upon this planet. The carvings of prehistoric races depict the march of organized armies, and from the deepest shadows of history echoes faintly the clash of contending nations. In ancient times the art of war, like other fields of human endeavor, was simple in its practice, victory depending largely upon numbers and brute strength, though the successes of the great commanders of the past, such as Alexander, Pyrrhus, Hannibal and Caesar, were due in part to superior equipment, and in part to a better grasp by them of the principles of military tactics and strategy. With the increasing complexity of civilization the art of war has not been left behind. Its demands along the lines of equipment, personnel and brains have steadily increased, and today more than ever before, we find in Europe that the latest discoveries in every branch of science, the co-ordinated energies of the entire nation, and the keenest of intellects are requisitioned to add to the death-dealing powers of the contending races.

While war dissipates treasure, and sacrifices

human life by reason of disease and injury, it is the duty of the medical officer to prevent needless wastage of life and limb, first in order to promote military efficiency and secondly in the interest of humanity. *And let it be emphasized at the outset that today the first duty of military medicine is not humanitarianism.* War in its essence is both cruel and wasteful, putting the good of the whole above that of the individual, and the military medical service aims primarily to prevent unnecessary waste and to remove from the front the inefficient, in order that the supreme commander may have the largest possible number of unhampered fighting men on the firing line. If there is a clash between the welfare of the wounded and the movements necessary for the most efficient prosecution of the conflict, then humanitarianism must give way to military necessity, since victory is the paramount consideration and ultimate success the only complete justification of war. Consideration for the wounded must not be allowed to interfere with the interests of the army as a whole, and it has been said that the commander takes best care of his wounded by annihilating the enemy as promptly as possible.

Like his combatant comrade the military medical officer must bring to his aid, both in peace and in war, every resource known to the healing art. In no other field of professional life is the physician expected to be thoroughly familiar with so many diverse branches of knowledge.

The development of military medicine and surgery began at the same time, and kept pace with the slow growth of those arts in civil life.

Egyptians, Babylonians and Hebrews had physicians with their armies, and Sanskrit accounts inform us that thousands of years ago the wounded were removed from the field of battle, and taken care of in tents where beds of leaves were prepared for them. For many ages priests assumed the rôle of physicians in both military and civil practice. Homer tells us that several of the great commanders were skilled in the treatment of wounds, and that a fleet of thirty ships was set aside for the care and transportation of the wounded,—the first record of ships being used for that purpose. That the work of the surgeon was appreciated in the time of Homer is shown by the words he put into the mouth of Nestor:

"A surgeon skilled our wounds to heal
Is more than armies to the public weal."

Homer also lauded the two sons of Aesculapius, both for their skill in arms and for their wisdom in surgery, and thus wrote of them 1200 years before the birth of Christ:

"Of two great surgeons, Podalirius stands
This hour surrounded by the Trojan bands,
And great Machaon, wounded, in his tent
Now wants the succor which so oft he lent."

Again he describes an operation performed by one of the surgeons as follows:

"Patroclus cut the forky steel away;
While in his hand a bitter root he pressed,
The wound he washed and styptic juice infused;
The closing flesh that instant ceased to glow,
The wound to torture, and the blood to flow."

As an example of the practice of a later Greek period, it is stated that Xenophon had eight field surgeons with his 10,000 troops.

During the Roman republic officers of wealth and prominence had their own private surgeons who accompanied them on the march, but there were no special surgeons for the armies. A regular military medical service dates from the time of the Emperor Augustus. At one period we are told that each cohort of 420 men had four surgeons, while each legion of ten cohorts had a legionary physician. In the navy there was one physician to each trireme. The physicians were Romans, or naturalized foreigners, and received special instruction for their vocations. At this date hospitals (*valetudinaria*) were established for the severely wounded who were cared for by male attendants. Physicians to Roman legions were of two grades, but commanded little respect and their standing was on a par with that of the non-commissioned officers. Under the influence of Christianity it became possible to secure more capable surgeons, and non-combatant hospital corps men and litter bearers came into use. Their duty was to

remove the seriously wounded to a place of safety, and to care for them, receiving a reward in silver for each man saved. They were required to carry a supply of drinking water and to furnish it as long as the wounded suffered from burning thirst. Each army had a common hospital. The physicians had no executive power and were subordinate to non-commissioned officers.

Abul Kasem, an Arabian surgeon of note living in the latter part of the tenth century, in his work on medicine devoted to the practice of military surgery a chapter which embodied his own experience on the battlefield. The Helvetians regarded the treatment of the wounded as a sacred duty, but limited its application to their own soldiers, all wounded of the enemy being invariably killed. This practice was sanctioned by many other nations.

After the decline of Rome, armies seem to have been without organized surgical assistance for many centuries. Wounded were removed and cared for by their comrades and by female camp followers. Up to the 13th century the practice of medicine was largely carried out by monks, and when this was prohibited by Papal decree, it fell into the hands of the barber-surgeons, who for many years were the only representatives of a sanitary service with combatant units. The names of two military surgeons, Manniot and Nigellus, are recorded in *Domesday Book*, 20 years after the battle of Hastings. In 1300 it appears that an effort was made to establish a medical corps in the English army, but in the muster roll of 1346 no sanitary personnel is mentioned. In 1415 at the battle of Agincourt there were with King Henry V a physician, a surgeon and 12 assistants. Physicians, however, were for the nobles, not for the common soldiers. Charles the Bold of Burgundy in the 15th century is said to have been the first to attach surgeons to troops instead of to officers. Gustavus Adolphus did the same in 1630.

As the healing art slowly developed, a few better educated men came to occupy the higher medico-military positions, but in general there was no organized medical service in armies till about the 16th century, and even then conditions were most primitive. Most of the common soldiers with serious wounds were left to die where they fell. If ill or permanently disabled, they were dismissed with a little money to enable them to reach their homes. As illustrative of the practices of the times it is related that Ambroise Paré, the foremost military surgeon of the period about 1550, saw three desperately wounded soldiers placed with their backs against a wall. An old campaigner inquired, "Can those men get well?" to which Paré replied "no." Thereupon the old soldier went over to them and cut all their throats, as the chronicle puts it, "sweetly and without malice." When Paré upbraided him the old campaigner said he prayed God, if he were in similar plight,

that some one would do the same for him, that he might not linger in his misery.

The ancient treatment of military wounds was most primitive. For many ages injuries inflicted by swords, lances, arrows, and mace chiefly claimed attention. Arrow wounds were often regarded as poisoned, so treatment by boiling oil was considered by many as most appropriate, and may have had some favorable influence by combating infection. Oil and wine were a favorite remedy for wounds. Arrow-heads lodged in the body were drawn out with various crude instruments. Often they were pushed through and removed by incision from the opposite side. In other instances, where less accessible, they were treated by drawing plasters. Rabbits' hair, mill dust, and moss from skulls found in graveyards were used as styptics. Two of the greatest teachers warned surgeons not to undertake an operation, if the life of the patient was in jeopardy, until he had received the last sacrament,—a very cheering pre-operative procedure. As most of the ancient surgery was practiced by men without education, the literature on the subject is very scanty and unreliable. Clumsy instruments for extraction of arrows were used for centuries without improvement, and ignorance and superstition clogged the wheels of progress.

The introduction of gunpowder, beginning in the middle of the 13th century, gradually effected a complete revolution in military strategy and opened up new fields for the military surgeon. The replacing of long-bows and crossbows by firearms progressed very slowly, and improvement in the efficiency of these weapons was equally backward. In the unsatisfactory state of surgery in the mediaeval period, the introduction of firearms brought new dangers and increased the sufferings of the wounded. Fractures of the long bones, previously rare in warfare, became common, together with extensive lacerations of the soft parts. Probes and fenestrated bullet forceps were gradually introduced. In the 15th, 16th and 17th centuries the writings show that some still considered such wounds poisoned and treated them by boiling oil, multiple scarification and venesection; while others, especially German surgeons, objected to these cruel methods and resorted to mild measures, such as warm oil of turpentine, hempseed oil, honey and warm milk, especially goat's milk. Tents rubbed with pork to keep the wounds open were advocated. Alum, white hair of the rabbit, droppings of peacocks, dried blood, burning cotton and red-hot irons were relied on as hemostatics. Suppuration was considered a necessary preliminary to healing. Amid the barbaric methods, the charlatanism and the superstition of the 15th and 16th centuries, a few brilliant lights flickered, notably Wurz, a famous Swiss barber-surgeon (1518-1575), Mithobius who wrote a treatise on military surgery in 1553, and Gelman who pub-

lished works on the same subject in 1652. Gelman described a death from tetanus, following a gunshot wound, which he blames on the surgeon, saying that the patient could have been saved if he had been given a draft of Thiriak Andromach in wine of lily of the valley, and if the neck had been rubbed with a particular ointment, and the mouth held open with a gag. The greatest advance in surgery of this period was made by Ambroise Paré (1510-1590), to whom belongs the credit of having brought about the introduction of the ligature, though he himself was not the first to use it. Purman, who wrote an excellent book on military surgery in 1738, is the first to describe deformation of bullets.

In the earliest recorded sanitary organization with armies the barber-surgeons were attached to companies, and a staff physician was assigned to the headquarters of each large force. Regimental surgeons were appointed in the English service as early as 1639 and ranked with chaplains. Sick and wounded were treated in their company camps by camp followers, and when the army moved were carried on wagons or left at the nearest town. In some cases the barber-surgeons provided their own medicines and instruments, while in other instances deductions were made from the men's pay for the purchase of such articles. About the year 1700 medicine chests were provided as a part of the equipment of regiments. In the early part of the 18th century the training of a better class of military surgeons was begun and these men were placed in the position of regimental surgeons, supervising the company barber-surgeons. England was one of the first countries to recognize the necessity of a regular medical service in the army and to respect medical officers. From very remote times the medical department was an integral part of the English army, and in 1685 mention is made of a surgeon general, and under William III there was a physician general, Sir Patrick Dun. In 1751, for the first time English surgeons were permitted to wear the uniform of the troops to which they were attached, and in 1783 a law was passed prohibiting the sale of the position of surgeon, but this abuse nevertheless continued for a long time. A real medical service in France dates from 1708.

In the 17th century military hospitals began to be established in garrisoned towns and in the rear of armies, and to these as bases the wounded were removed. Partly mobile hospitals came into restricted use about 1700, but were not adapted for accompanying marching troops. For many years these hospitals usually carried no tentage and did not reach the field till a day or two after the battle. By a treaty between England and France these hospitals were declared neutral and were treated as such. The Napoleonic wars brought out the amplification of sanitary resources by the use of combatant

soldiers detailed as litter-bearers and surgeons' helpers. About this same time the barber-surgeons were being generally replaced by trained surgeons, several of whom were attached to a regiment, while medical staff officers were being placed in charge of the sanitary work with armies to coördinate their sanitary resources. Only in 1779 had the barber-surgeons in the British army been given the grade of sergeant, and even then each of them had to expect a whipping if one of his grenadier patients died under his care. Ambulance wagons to transport wounded gradually appeared as a part of the equipment of regiments. About 1810 so-called flying hospitals, able to follow troops, began to be roughly organized. A further great improvement in the type of medical men with the colors occurred, with corresponding improvement in their status. In 1815 Dr. Jackson, who was appointed by the Duke of York, Physician of all the Forces, demanded military honors and decorations for his officers. He said that such titles were irrelevant to scientific men, but that the common soldier would obey the medical officer better if he possessed rank in the army. Jackson's view is as true today as in the past, and forms the basis of the present grading and organization of medical departments in all armies. However, in the English service up to 1871, medical officers absolutely belonged to regiments, were exclusively under the control of their commanding officers, and had no powers of command. As a result of our Civil War and the Franco-German conflict in 1870, the importance of increased mobility for sanitary troops was recognized in the British service, the regimental system was broken up, and gradually a medical staff with mixed medico-military titles developed; but its officers were still denied many of the powers which pertained to similar grades in the line. Only in 1898, when the designation was changed to the Royal Army Medical Corps, were British medical officers granted full military titles and most of the accompanying powers which correspond with like grades in combatant branches of the service.

Light field hospitals, able to accompany troops with supplies, surgeons, apothecaries and assistants, came into being about 1850, but these had no organization of litter-bearers to bring wounded to them and depended on requisitioned country carts for transport of disabled. The Crimean War demonstrated the inefficiency of the British medical department and emphasized the necessity for some mobile transport organization. As a result litter-bearer sections were organized in several armies. Prior to this the fate of the wounded had been pitiable, though the short range of weapons and close order of battle formation had been factors which greatly facilitated collection and succor of the injured.

Improvements in firearms and munitions, especially rifling and the use of fixed ammuni-

tion with conoidal bullets and percussion caps, had caused, at the time of our Civil War, a great increase in the range and rapidity of fire. Tactics began to adjust themselves accordingly. Danger zones increased in depth and the rapidity and precision of the new arms brought about thinning and lengthening of the lines. As a result the wounded were scattered over a much larger area than before. Our sanitary service at that time consisted of several surgeons and a small hospital for each regiment, a fairly mobile field hospital under canvas for each division, a division surgeon to administer the foregoing, and at the bases a great number of vast fixed hospitals. This system was cumbersome and impracticable in that it retained with the regiments seriously disabled men and bulky supplies, neither of which had a place there. It was therefore destructive to tactical efficiency by interfering with the mobility of fighting units. It was undesirable from a humanitarian standpoint because it held sick and wounded at the front where their care and comfort could not be properly considered. The sanitary equipment of the regiments was usually far back with the trains and not available when most needed. The personnel of one regiment might be overwhelmed with wounded while that of another, not engaged, was entirely unoccupied. There were no reserve sanitary organizations for bridging the gap, often very great, which intervened between the firing line and the division hospital, and between the latter and the advance base, or for reinforcing the sanitary services attached to commands which were overwhelmed by a high proportion of casualties. As a result great delays in succoring the wounded, and unimaginable suffering, occurred in the early part of the Civil War. That these undesirable conditions were not confined to our own army is shown by the words of an experienced French military surgeon, Le Gouest, who wrote about this time as follows: "Military surgeons who have been present in various engagements all know that when the wounded fall in ranks there are none to carry them off except their own comrades; the soldier quits the ranks often never to return or only after the fight is over; the number of men carrying off their comrades is rarely limited to the number really necessary, and one may sometimes see four or five or even six soldiers conducting to the hospital a man slightly wounded and marching quite as well as his comrades." It is easily understood how serious to the plans of the commander were such depletions of the ranks in the alleged interest of humanity, but often with the real object of escaping danger. So crippling was the disability under which the sanitary service labored that on August 21, 1862, and again on September 7, 1862, Surgeon General Hammond submitted plans for an independent sanitary organization for use with mobile troops. In

both instances these recommendations were disapproved by the War Department. In the Army of the Potomac, however, Medical Director Letterman had convinced General McClellan of the need for special aid for the wounded, and on August 2, 1862, he issued an order embodying Letterman's views. His plan, in brief, called for independent ambulance corps for each army corps. This corps was equipped with ambulances and litters, a medicine wagon, and a mounted personnel of officers and sergeants. The transportation was to be used for the carrying of sick and wounded and for no other purpose. *No persons except those duly authorized were permitted to accompany sick and wounded to the rear, either on the march or in battle.* Subsequently Letterman added plans coordinating the work of the ambulance corps and the field hospital. The advantages of this system promptly became manifest, and it gave admirable service at the battle of Antietam in the month following its inception. Later Grant adopted the essentials of Letterman's plan in the army of Tennessee, and finally, though very tardily, Congress passed an act, approved by the President on March 11, 1864, establishing a uniform system of ambulance service throughout the military forces. The value of this mobile independent sanitary organization in saving life and suffering, and in promoting tactical efficiency, cannot be overestimated. The organization and plan worked out by Letterman was so complete and practicable that it remains today the foundation upon which the mobile sanitary service in all armies is largely built, though experience has taught that its personnel should be composed exclusively of officers and men belonging to the Medical Department. With the development of field hospitals and ambulance companies, both being large, independent sanitary organizations, the need of military rank, with authority to command, for medical officers has become more evident, and the subject of sanitary tactics, as an important branch of the art of war, has become an established fact, recognized in all armies.

As the organization needful for the handling of the disabled gradually emerged from the neglect and chaos of the middle ages, so also the practice of military surgery improved coincidentally with the progress of surgery in civil life. Intimately associated with the earlier achievements are the names of Paré, John Hunter and Larrey. The suffering inherent in war was enormously alleviated by the discovery of anaesthesia. Still the specter of infection remained, and hospital gangrene was the scourge of the wounded in the Civil War. With the development of antisepsis and asepsis a new era dawned for the military as well as for the civil surgeon. At a somewhat later date, the introduction of small caliber, steel-jacketed bullets, which usually produced a small, relatively sterile wound, together with the use of sterile first-aid

packets, led to a vast number of healings by first intention in the case of gunshot injuries which had been merely dressed aseptically and then left alone. Asepsis and conservatism were the watchwords, and the saying passed current that the fate of "the wounded man rests with him who applies the first dressing." Much of this optimism has disappeared in the last two years, as a result of the vast European War. The bullet of the latest military rifle is not as humane as that used a dozen years ago. Shrapnel, high explosive shells, hand grenades and bayonets, produce a proportion of wounds far in excess of anything dreamed of in the past. The conditions of trench warfare favor infection, and the great range of modern weapons, and the vast numbers of wounded, have rendered collection of the injured and removal to a place of final treatment far more slow and difficult than ever before. The character of the wounds produced by shell, shrapnel, hand grenades, and spitz bullets is such that the first-aid dressing has failed to confer as high a degree of protection as it afforded in the wars of the previous two decades. Asepsis is less in vogue, and in England the cry has been raised, "Back to Lister,"—in other words, antisepsis with strong disinfectants like pure phenol. Extensive opening of wounds with free drainage has replaced expectant and conservative treatment. No longer is it said that the fate of the wounded rests with him who applies the first dressing, but rather that his future depends upon the rapidity of transportation and the possibility of thoroughly treating his wounds as soon as possible by elaborate surgical procedures.

II.

Turning from the field of surgery, and relief organization in battle, we find that military medicine, as distinguished from surgery, is intimately associated with, and a decided contribution to, the subject of preventive medicine. Since the days when "The Assyrian came down like a wolf on the fold," armies have been peculiarly the victims of epidemic diseases. Numberless campaigns have failed in whole or in part, because of dysentery, cholera, plague, scurvy, measles, smallpox, yellow fever, malaria, typhus or typhoid. An interesting review might be written dealing with history as influenced by epidemic disease. Up to the time of the Franco-Prussian War in 1870, disease had always claimed far more victims in every campaign than had the bullets of the enemy. With the growth of the knowledge of infections during the last half-century, the control of diseases due to preventable causes has become one of the paramount duties of the military surgeon, and the success he has attained is shown in the remarkably great decrease of sickness in the Russo-Japanese war, and in the present war in Europe, as compared with campaigns of the past. In our own service three great triumphs

stand forth,—the eradication of yellow fever in Cuba, the prevention of beri-beri among Philippine troops, and the suppression of typhoid fever through our entire army by anti-typhoid inoculation.

Looking back a little more than a century and a half the eye is caught by the name of Sir John Pringle (1707-1787), who is called the founder of modern military medicine as contrasted with surgical practice. Pringle, a Scotsman, served on the continent in the mid-century wars and was surgeon general of the English army from 1742 to 1758. His work "Observations on Diseases of the Army," 1752, promulgates the true principles of military sanitation, especially in regard to the ventilation of hospitals, ships, jails and barracks. He gave a good description of typhus fever, showed that jail fever and hospital fever were the same, correlated the different forms of dysentery, and named influenza. About six years later appeared Van Swieten's monograph on camp diseases, and two works on the hygiene and diseases of sailors by James Lind and Thomas Trotter. Both of these physicians published monographs on the subject of scurvy, which came into great prominence through its ravages among the sailors of Lord Anson's expedition in 1740.

No review of the history of military medicine would be complete without the mention of some of those military medical men whose names should always be held in memory because of notable services to the cause of progress and humanity. The civilian is apt to think that the duties of the medical officer are light and routine, and that his professional work consists largely in treating venereal diseases. Far otherwise. His life is a busy one, entering into practically every field of medicine, in many of which he delves so deeply that he unearths nuggets for the use of future generations. The first name I will mention is that of Ambroise Paré, born in 1510, the great French military surgeon whose fame particularly rests on the substitution of the ligature for the actual cautery and the styptic relied upon before his time for the control of hemorrhage. He was not the first to use the ligature, but to him belongs the credit of having led to its general introduction against great opposition. He combated the prevailing opinion that gunshot wounds were poisoned. He opposed the use of boiling oil, popularized the use of the truss, introduced massage, artificial eyes and staphyloplasty. He described fracture of the neck of the femur, and was the first to suggest syphilis as a cause of aneurysm—a goodly contribution for one who began his career as an apprentice to a rustic barber. His first military patient was a captain shot in the ankle. Paré says of this case, "I dressed him and God healed him." As he passed through campaign after campaign, his reputation became more firmly established among both soldiers and phy-

sicians. When he entered Metz, which was being besieged by Charles V in 1552, and was dramatically presented to the officers by the Duke of Guise, he was received by the soldiers with shouts of triumph and the exclamation, "We shall not die even though wounded, for Paré is among us."

John Hunter, the erudite scholar and great surgeon, was a staff surgeon in 1761, when he gained his unique knowledge of gunshot wounds. His contributions to surgery are too well known to need mention. He was made deputy surgeon general in the British army and introduced a system of promotion in the medical service.

The name of Baron Larrey is ever associated with the campaigns of Napoleon, and he was one of the great Emperor's intimate friends and most trusted advisors. His energy on the battlefield and his genius for organization have never been surpassed. His flying ambulance corps and mounted surgeons often passed through showers of bullets in bringing aid to the wounded. At Aboukir Bay he amputated General Sully's leg above the knee under fire, and carried this officer to safety on his own back just in advance of a charge of British cavalry. He was an able surgeon and the first, in spite of strong opposition by civil surgeons, to advocate the employment of plaster splints in the treatment of gunshot fractures. In fractures of the leg, he used them to allow the patient to leave his bed as soon as possible. His military service extended over 50 years, and he participated in 26 military expeditions in three continents. Probably under no circumstances did the ability and courage of this remarkable man show to better advantage than during Napoleon's retreat from Moscow. After the battle of Borodino, Larrey made 200 amputations, practically with his own hands, with no bed or shelter, cold so intense that the instrument often fell from the benumbed fingers, and with the Cossacks hovering around equally ready to kill patient and surgeon. At the battle of Waterloo, he was sabred by Prussians and left for dead. Recovering consciousness and trying to make his way across France he was captured, robbed and sentenced to be shot. A Prussian surgeon, who had attended Larrey's lectures several years before, recognized him, and the order of execution was stayed by Marshal Blücher, whose son had been saved through Larrey's exertions when wounded by the French in the Austrian campaign.

The greatest of Russian surgeons, and one of the greatest military surgeons of all times, was Nikolas Ivanovich Pirogoff, born in 1810, and who, like Paré and Hunter, had a remarkable career of self development. He served in the Caucasus in 1849, in the Crimea in 1854, and also reported on the Franco-Prussian and Turco-Russian campaigns. He defined war as a "traumatic epidemic." He introduced female nursing of the wounded in the Crimea and was a warm advocate of freedom and higher educa-

tion for women. In his treatise on military surgery, published in 1864, he holds large hospitals responsible for the spread of epidemic disease, and recommends small pavilions and segregation. His method of complete osteoplastic amputation of the foot is well known to all surgeons.

Friedrich von Esmarch, the great German military surgeon, introduced the first aid dressing and standardized surgical hemostasis by the Esmarch bandage. He did much to improve the status of military surgery, and the first aid treatment of wounds. By marrying a royal princess he became uncle to the present Kaiser. Turning from the realm of the wounded we find that Emil von Behring, whose name is ever associated with antitoxin, began his career as a Prussian army surgeon. In 1880 the epoch-making discovery of the malarial plasmodium was made by Alphonse Laveran, a French army surgeon. The importance of the discovery of plasmodium was equalled by the demonstration of mosquito transmission made by Ronald Ross, a surgeon in the Indian Army Medical Service. After years of patient work he was able to trace the full development of an avian parasite in *Culex* and partly that of the human malarial parasite in anopheles. Ziemann, a naval surgeon, was the first to confirm the work of Ross and the Italian observers. More recently much important and original work on malaria, as well as on entamoeba, has been done by Captain Charles F. Craig of our own medical corps, who has written several monographs on these subjects. Captain Craig, in association with Major Percy M. Ashburn, was the first to establish the truth of Graham's theory that dengue fever is transmitted by the bite of mosquitoes of the genus *Culex*.

Our knowledge of tropical medicine was enormously advanced by Col. Sir W. P. Leishman and by Major Charles Donovan, both of the British service, who independently discovered that the so-called Dum-Dum fever, or Kala-Azar, was due to an intracellular parasite, which has been named, in honor of its discoverers, *Leishmania donovani*. The name Colonel Leishman is also associated with one of our well known polychrome stains.

Other names intimately associated with tropical and preventive medicine are those of the naval surgeons Mormand and Bovay, who first described the parasite of Cochin-China diarrhoea; Major Bailey K. Ashford of our army, whose work on hook worms in Porto Rico is too well known to need description; Captain E. D. Vedder who in my laboratory in Manila performed the experiments with emetin and amoeba, which led Leonard Rogers to undertake the hypodermic treatment of amoebiasis with that drug. Captain Vedder and myself in Manila carried out extensive investigations on beri-beri, and were the first to show that the extremely fatal infantile beri-beri was promptly

curable by the use of an extract of rice bran or polishings. While the English and the Germans were the pioneers in developing the anti-typoid inoculation, it was through the enthusiasm and energy of Major F. F. Russell of our medical corps that the practice was introduced and made compulsory in the United States Army. Our service was the first in which compulsory anti-typoid vaccination was employed, and the demonstration that the scourge of armies could be eradicated, as a result of this measure, stands as one of the greatest triumphs of preventive medicine.

Among others in our own service whose names will be remembered, should be mentioned General George M. Sternberg, formerly surgeon general of the army, and who has but recently died. Sternberg was a pioneer in bacteriology in this country and his book on that subject was for many years a standard work of reference. He was particularly interested in the subject of yellow fever and it was due to this interest, that the board of army medical officers was appointed which disclosed the method of transmission of that disease.

Among those members of our Army Medical service who subsequently became prominent because of work outside the practice of medicine and surgery may be mentioned Major-General F. C. Ainsworth, who was for many years adjutant general of the army, and Major-General Leonard Wood, a graduate of Harvard, who for high executive ability has been promoted to many important posts. Colonel John Shaw Billings has been pronounced by competent authority to be the most eminent bibliographer in the history of medicine. He served with great credit as surgeon through the Civil War, and in 1864 was transferred to Washington for duty, where he remained till his retirement in 1895. His name is indelibly associated with the upbuilding of the Library of the Surgeon General of the Army, which through his energy became the largest medical library in the world, and also with his index catalogue of this library. With Fletcher he edited the *Index Medicus* for 20 years. The trustees of the Johns Hopkins Fund in 1876 elected him as their medical advisor after having accepted his designs for the Johns Hopkins hospital as the most satisfactory of any submitted. In 1896, one year after his retirement from active service, he became superintendent in chief of the New York Public Library, where he solved the enormous difficulties connected with the consolidation of the New York libraries and the construction of the present magnificent building. He remained with the library until his death in 1913. In 1905 he was selected to lay out the plans for the Peter Bent Brigham Hospital now facing the Harvard Medical School.

The name of Jonathan Letterman should always be remembered by military surgeons as the greatest sanitary organizer of modern times

I have already referred to his plans for an ambulance corps which became the basis for such service in all armies. He put an end to the depleting of the ranks of the army which had been caused by injudicious and careless discharges for disability, and by the license of sending to distant general hospitals men who should never have left the zone of operations. He insisted on having sick and wounded treated at hospitals nearer the front whenever the condition of the service and the welfare of the patient permitted, thus doing away with one of the chief factors in military absenteeism. By well-thought-out sanitation, strenuously enforced, he kept the Army of the Potomac in a state of health unparalleled in forces of such magnitude at that time. For alleviating the sufferings and saving the lives of thousands of his countrymen, and for adding to the vigor, discipline and effective fighting strength of the principal army of the Republic, he has a just claim to the grateful remembrance of his professional brethren, of his comrades in arms, and of his countrymen. General McClellan wrote of him in 1863, "I never met with his superior in power of organization and executive ability." His name is now commemorated in the Letterman General Hospital at the Presidio of San Francisco.

The most distinguished and important internist of the early French school was René Laennec (1781-1826). Like Bichat, the creator of descriptive anatomy, he was a regimental surgeon in the French Revolution. Both were early victims of phthisis. If we can trust Kipling's description it was while a military prisoner in England that Laennec carried out the experiments with the stethoscope, the instrument with which his name is indissolubly connected.

Intimately associated with the Post of Plattsburg Barracks from which I have recently come, is the name of an army medical officer at whose door opportunity knocked and was not refused entrance. Dr. William Beaumont, by his observations and experiments on the Canadian half-breed, Alexis St. Martin, laid the foundation for our present knowledge of gastric digestion. Part of this work was carried out at the isolated military post of Mackinaw in the primeval forests of Michigan about 1825, and the remainder of the investigations were conducted at Plattsburg Barracks, N. Y. Beaumont was the true leader and pioneer of experimental physiology in our country. His work remains a model of patient, persevering investigation, experiment and research.

The conquest of yellow fever is a far-reaching achievement to which America can lay entire claim and which especially reflects credit upon the Medical Corps of the United States Army. In 1900 the army board, consisting of Major Walter Reed, Major James Carroll and Contract Surgeons Lazear and Agramonte, proved by a series of brilliant and conclusive experiments that yellow fever is transmitted by the bite of a

mosquito, the *Stegomyia fasciata*. Basing his sanitary work on the discoveries of Reed and his associates, our present Surgeon General, William C. Gorgas, freed Cuba of yellow fever and made possible the building of the Panama Canal, thereby establishing his claim to be called the greatest sanitary expert the world has known.

The experiments which established the mosquito theory of yellow fever transmission are so recent and well known, that I shall not enter into them except in one particular. Doctor Lazear died from yellow fever contracted while at this work. Actg. Asst. Surg. Robt. P. Cooke and several volunteers from the hospital corps slept for thirty nights in a small unventilated room, using the bedding and wearing the garments just taken from fatal cases of yellow fever, and which were soiled with the black-vomit and excretions of these patients. Major Carroll first, and subsequently several members of the hospital corps, submitted to the bites of mosquitoes which had previously fed on yellow fever victims. Several of them contracted the disease, and Major Carroll narrowly escaped death. The world at large recognizes that it requires high courage for the soldier to charge the enemy, even in the excitement of battle and surrounded by his comrades. In the present European war hundreds of medical men have met wounds and death in serving the cause of fatherland and of humanity under fire. It called for courage of a different quality, but of quite as high an order, to enable a man to submit himself, in cold blood, for experimental infection with a disease which was as mysterious, as painful and as fatal as yellow fever. All honor is due Major Carroll, Dr. Cooke, and those Hospital Corps men who stood this test in the interests of humanity and to the everlasting credit of military medicine. There is no better example of the sentiment that "Peace hath higher tests of manhood than battle ever knew."

Original Articles.

ECLAMPSIA AT THE BOSTON CITY HOSPITAL: A REVIEW OF THE CASES OF TWENTY-THREE YEARS.

BY ERNEST BOYEN YOUNG, M.D., BOSTON.

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DURING the past twenty-three years, 183 women with threatened or actual eclampsia have been admitted to the Gynecological Service at the Boston City Hospital. Thirty-six of these

were admitted post-partum, having been delivered outside the hospital, either normally or by operative procedures concerning which little or nothing is known. The same applies to the details concerning the children. A few women (6 in number) were received early, as threatened eclamptics, and, after treatment, left the hospital undelivered; while 14 others, entering with mild symptoms, miscarried or were event-

not always been the fault of those who wrote them, for many patients have entered unconscious, and still others have had neither the intelligence nor command of English to enable them to respond to the questions.

The character of the cases upon which this paper is based may be judged from the fact that 146 had convulsions, most often multiple; 20 apparently had none; and in 17 there was no

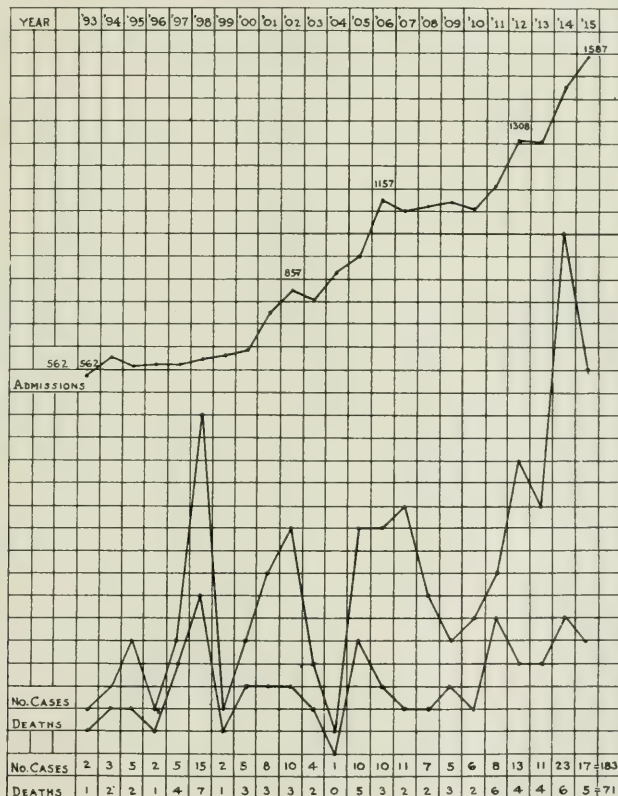


CHART SHOWING ECLAMPSIA AND ITS MORTALITY FOR EACH YEAR IN RELATION TO TOTAL ADMISSIONS TO THE SERVICE

ually delivered. Deducting the 20 milder cases, the remaining 163 cases, which include 36 received post-partum, entered usually as emergencies, often unconscious, and after convulsions had occurred. The majority, if we may judge from the records, were in very critical condition at the time of admission, and some were moribund.

The facts in the records, while interesting, are exceedingly hard to classify, and disappointing in many ways, owing to the incomplete information they contain. This, it is fair to state, has

information available; although in a great proportion of this last group, it is probable that they occurred. In this paper the writer has attempted to give the facts, in so far as possible, concerning the eclamptic emergencies admitted to the Boston City Hospital, which may be classed in the main as neglected cases.

A review of the nationalities has failed to be of much value. Data as to birth were available in exactly 140 cases, and of these 29 were born in Ireland and 63 in the United States. In spite of the large number of Jewish patients treated

in the wards, they number only 10 in the series, and appear to possess a great resistance to the toxemias of pregnancy, as they certainly do to puerperal infection.

A comparison of the annual number of admissions to the service during these 23 years with the number of eclamptics (threatened or actual) during the same period, shows that the incidence is irregular, and that the number treated does not correspond with increase in patients. The time of year does not seem to have any particular bearing, for although the greatest number entered in January (20), the cases are quite evenly distributed through the rest of the year.

The age in 140 patients, where this was known, was:

15-20 years	28
20-25 "	47
25-30 "	27
30-35 "	17
35-40 "	13
40-45 "	6
45-50 "	2

140

In 138 cases in which the number of the pregnancy was available, 90 were primiparae; 16 were pregnant for the second time; and in 30 the pregnancy varied quite evenly from the third to the twelfth. There was one in the fourteenth and one in the twentieth pregnancy (15 full term, 4 miscarriages). In addition to these, but not included above, were 6 "multiparae" in whom the number of pregnancies was not stated.

The month of the pregnancy, as given, was often approximate, but the statistics in 167 cases are as follows:

5-6 months	10
6-7 "	13
7-8 "	51
8-9 "	33
9-10 "	55

167

The statements as to duration of symptoms before entrance are of comparatively little value, and vary in time from "a few hours" to eight weeks. The symptoms of which the patients complained were those common to this form of toxæmia of pregnancy.

Three cases are recorded in which there had been eclamptic seizures during a previous pregnancy. One of these patients, then in her eighth pregnancy, had convulsions in the pregnancy preceding, and the remaining two, both in their fifth pregnancy, had each a similar attack; one woman with her first and the other with her third child. Three of the severe cases were too near death to deliver.

All the urinary examinations showed albumen, with one exception, and in this instance the patient recovered. Jaundice is mentioned but once and this patient died on the seventh day.

Convulsions were stated to have occurred in 146 of the 166 cases with available information on this point. This includes all admitted to the wards, before and after delivery. The seizures were multiple in most instances and the condition of some, not included because details were wanting, would indicate that convulsions had taken place before admission.

The following table gives the statistics of 166 cases with reference to convulsions:

Convulsions before delivery	83
Convulsions after delivery	32
Convulsions before and after delivery	27
Convulsions during and after delivery	4
No convulsions	20

166

Although 20 had no convulsions, 14 of these were delivered because of "threatened eclampsia" or delivered themselves by spontaneous abortion. Six were discharged undelivered.

The mortality of the series is appalling, but considering the circumstances, it is surprising that the results are even as good. In the first place, it must be remembered that a great number of these women were examined outside the hospital; that most had received no treatment, and that some were even found by chance—as one woman lying in the bottom of a closet; another comatose in bed with a foetus beside her, which had been born during the convulsions. Many have been received moribund or in a condition offering little hope of benefit from any procedure.

The deaths compared with the admissions appear in the chart, so it will suffice to say that of 183 cases, including all those admitted to the wards at any stage, 112 recovered from the toxæmia and 71 died—2 of the latter from sepsis after some weeks of sickness. Three were too far gone to deliver. Of the 36 women admitted post-partum, and included in the figures above, 23 lived and 13 died. Many of these were apparently delivered normally at full term, and, having convulsions, were sent to the hospital.

In 130 cases, including 3 delivered outside the hospital, the results for the mothers, delivered by various methods, were as follows:

	RECOVERED	DIED
Forceps	24	19
Version	64	29
Non-operative delivery	37	29
Vaginal Caesarean	4	1
Abdominal Caesarean	1	1
TOTAL	130	79

51

Manual dilatation was employed in many of the severe cases. Of 49 cases where the cervix was opened by this method, without using the Voorhees bag, 31 recovered and 18 died.

There were also five cases where multiple incisions of the cervix were tried,—apparently in combination with some form of dilatation,—and of these, 1 survived and 4 died.

The Voorhees bag was used in 22 cases. Four

non-operative deliveries recovered, one of which had a blood pressure of 210 at the time of admission, and 3 died.

Of 15 operative deliveries 3 died, 2 of these after use of the bag at the start, with blood pressures of 210 and 220 respectively. Twelve recovered,—one with a blood pressure of 190. Fourteen of the 15 operative cases were delivered with forceps or by version, and in one the method of delivery was not stated. In two, the dilatation of the cervix was completed manually.

The number of the convulsions and the time of their occurrence are unobtainable in many cases, owing to the manner in which the cases are received—often with no history. In the series of 166 cases previously considered, of 83 women, with convulsions before delivery, 29 died; of 32, with convulsions after delivery, 10 died; of 27 with convulsions before and after delivery, 13 died (1 sepsis); and of 4 with convulsions during and after delivery, 3 died (1 sepsis). There were 20 cases with no convulsions and a mortality of 3.

The mortality among the 146 women with convulsions at some time during the toxæmia was 55; two dying of sepsis.

As would be expected, the longer the convulsions continued, the more deep the toxæmia and the worse the prognosis.

Figures concerning the mortality of the children are unsatisfactory. Many of our patients do not know the duration of their pregnancy, and often no data can be obtained. Thus many of the ages given were simply approximate and the figures, for living children, represent only those who apparently left the hospital alive.

Considering a seven months child as viable, in 125 deliveries there were 99 viable children (2 pairs twins), 33 of whom survived. Of 31 viable children born by normal labor, 21 died; while in 67 labors, 68 children (1 pair twins) were delivered by operative means, with a mortality of 52. There seems to be comparatively little difference in outcome between operative and normal deliveries as far as the child is concerned. This is undoubtedly due to the fact that many of the babies were premature, and their mothers extremely toxic. On the other hand, the cases where low forceps were used are included and would tend to help out the operative record.

The results of operative and non-operative treatment on both mothers and children have been considered. In looking over the records, the writer often finds it difficult to differentiate between mothers dying of toxæmia and those already weakened who perished from the shock of delivery. The number of convulsions, pulse rate and blood pressure are not by any means infallible guides as to how an eclamptic will bear operative delivery, and the writer, watching the results of the various methods, has changed his opinions somewhat regarding im-

mediate delivery by heroic measures. Many apparently hopeless cases survive a long operative delivery; and some, in apparently the same condition, fail to recover after very simple procedures. Under all circumstances the shock of an operative delivery is considerable, although many of those so delivered would doubtless perish under any form of treatment. It is usually in the milder cases that more gentle and prolonged methods of delivery are apt to be employed, although they appear, from the experience of the writer, equally effective, if not more necessary, in many of the severe cases under discussion.

Owing to the serious condition of most of these patients, the milder, rather than the more immediate and strenuous methods seem better suited for their delivery, and the latter should be used only when the former appear inadequate. Some patients may possibly be lost by delay, but more will be saved by the avoidance of shock.

In primiparae (except in the very early months) both where labor has not begun and where there is partial dilatation and a rigid os, most serious cases may be delivered by the use of the dilating bags; while in multiparae they are often still more effective. By this means we are imitating the processes of nature by which the best results in delivery appear to be attained.

Whether the irritation of the bag in the uterus tends to continue or to excite convulsions is a question upon which the writer is as yet undecided. Most excellent results have been obtained by their use in desperate cases, and there have been unfavorable results as well.

Although delivery is lengthened in some, there is much less shock, less liability to laceration of the cervix, and less chance of sepsis, even though manual dilatation is used to complete the task. A rigid os frequently softens and manual dilatation, if necessary, is more readily accomplished. The fact should be pointed out that Voorhees bags alone were used in some cases too sick for operative delivery.

For the vaginal Caesarean section as a means of immediate delivery, the writer sees no advantage in the clean cases advanced beyond 6 months; since the operation is difficult in primiparae under any circumstances. In multiparae it is also difficult, if the cervix is high in the pelvis. After the uterus is opened, the labor must still be ended by forceps or version and the repair is long and tedious. There were but 4 cases in this series, 3 of which were operated *in extremis* and fatal; one dying on the table.

Abdominal Caesarean section has been performed once. The writer believes it proper in certain cases where immediate delivery appears necessary and other methods seem too prolonged, uncertain and difficult, because of the size of the child or the condition of the cervix.

The relation of blood pressure to prognosis

and treatment is a matter of great interest in the severe types; but the available data are too small for absolute conclusions. Of 42 cases with data available, 12 died. Three died out of 7 with a pressure of 200 or over; 9 others died with pressures varying from 104 to 160; while 30 cases, varying from 210 to 706 and with an average systolic pressure of 157, all recovered.

The methods of delivery were so dissimilar that no comparison could be made to show the influence of any special method of delivery upon results.

High blood pressure makes the outlook less hopeful, but does not necessarily mean a fatal outcome. Diminution of pressure after delivery is a hopeful sign.

The number of venesections is too small for reliable statistics, especially concerning a procedure where judgment as to worth depends so much on an intimate knowledge of the individual case. It has been tried in the cases with high pressure and usually in severe types after delivery.

There were 18 venesections, 9 of whom recovered and 9 died. Six of the 9 mortalities were in cases received post-partum, and two of those who recovered were likewise admitted after labor. One patient died undelivered.

In ante-partum venesection, the writer has little faith, except in certain plethoric individuals, and believes it should be employed with the greatest care at this stage. It is not possible to foretell either the amount of blood which will be lost during birth or the reaction of a toxæmic patient to the strain of delivery.

Venesection is often of great advantage in the strong, healthy, full-blooded, restless individual, where blood pressure remains high or has a tendency to rise after delivery; but in those who are frail or fat and flabby its advantages are very doubtful. Loss of blood lowers the resistance to infection, to which all cases of toxæmia of pregnancy are very susceptible.

During bleeding the blood pressure should be carefully watched and not allowed to fall below normal; while to all cases of venesection, fluid should be administered either by rectum or by hypodermoclysis where the first method is not available. Additional fluid is not required by patients with oedema of the tissues.

The medical treatment has been along the usual lines,—free catharsis, gastric lavage, control of convulsions by sedatives and ether, enteroclysis, hypodermoclysis, and hot packs in some cases. Sweating has not been used so often during the latter years. It has appeared to be of doubtful efficacy, and distinctly detrimental to some.

The fact that patients, too sick for safe operative delivery, sometimes recover under medical treatment is often forgotten in the desire to obtain immediate results. The Voorhees bag may be advantageously combined with medical treatment. There are a number of cases in the pres-

ent series where delay in obstetric surgery has been followed by recovery, when operative measures would have been fatal for the mother. Each case must be considered by itself and no general rule can be applied; except that the method adopted for delivery should be the gentlest and most efficacious for that individual.

From what has gone before, it is clear that results with the class of cases received in our wards cannot be as good as one would wish, but are about what might be expected. On the whole, the mortality seems to be lessening. Unfortunately this cannot be ascribed to treatment alone, as the severity of eclampsia varies in different years.

This series is published in the hope that it may aid in some larger collection of cases.

The conclusions reached have been deduced from a study of the cases and are not all capable of proof by statistics alone.

CONCLUSIONS.

1. Incidence varies greatly in different years and without apparent cause.
2. Severe attacks occur mostly in primiparae from 20-25 years, in the latter half of pregnancy.
3. A little over one-half the cases with convulsions have seizures after delivery.
4. Non-operative delivery is most favorable for the mother.
5. The longer the convulsions continue, the greater the mortality.
6. Child mortality is high whether deliveries are operative or non-operative, owing to prematurity and toxæmia.
7. High blood pressure increases the gravity of the prognosis.
8. Venesection is a useful procedure in cases with high pressure and restlessness after delivery.
9. Induction of labor and delivery with the least possible operative interference offers the best chance of recovery for the mother.
10. Caesarean section is justified in certain cases where delivery by other methods seems too prolonged or doubtful in outcome.

REMISSIONS IN LEUKEMIA PRODUCED BY RADIUM IN CASES COMPLETELY RESISTANT TO X-RAY AND BENZOL TREATMENT.*

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THOSE who have had extensive personal experience with and opportunity for intensive

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study of leukemia recognize that there have been cases which did not respond to treatment by x-ray or benzol. Indeed, following the use of benzol, serious, even fatal, results have been reported, and toxic symptoms also may occur after the use of the x-ray. In certain instances benzol may cause a short period of temporary improvement followed by rapid fatal termination.¹ Such termination also may occur with other forms of treatment or without treatment. With the more recent improvements in x-ray apparatus by Coolidge and his co-workers, and by perfection in the technic of clinical application, it is probable that the number of cases which are refractory to x-ray will be considerably lessened.

Renon, Degrais and Tournemelle² in an admirable article add a sixth case of leukemia to the five already reported by them. They also refer to the French series of twelve cases of leukemia in which marked improvement resulted from the surface application of radium over the enlarged spleen. Eight of these had already been treated with Roentgen rays with no advantage or only with temporary improvement. Pinch of the Radium Institute of London³ also makes reference to a case of myelogenous leukemia in which the results of radium treatment were excellent. Von Noorden and Falta⁴ did not obtain any favorable results in leukemia by the use of radium emanation even by prolonged treatment in the emanatorium. Falta, Kriser and Zehner⁵, however, produced remissions in leukemia by the injection of thorium-X. In the small series of cases reported by them the immediate results were good, but the cases had been followed only a very short time, so that they did not draw any conclusions regarding end results of this treatment. German investigators have reported conflicting results from treatment of leukemia by thorium-X.

METHODS.

Benzol. The methods of administering benzol in the treatment of leukemia have now become almost uniform. Capsules, in certain instances coated with salol, containing 0.5 gram of benzol, are given with equal parts of olive oil to diminish the irritating local effect. Two of such capsules are given at first, increasing until ten, that is, five grams a day are administered. They should be taken immediately after meals and never during meals and it is important that patient should be kept in the hospital during such treatment.⁶ It may take ten days to three weeks before the effect upon the blood is observed. It is customary to stop administration when the white count in leukemia has been reduced to 20,000. Boardman states that sixteen out of one hundred cases fail to show improvement and that another eight cases, although reacting favorably at first, died during or soon after the discontinuance of treatment. Also certain toxic effects have been reported such as

gastro-intestinal disturbances, headaches, dizziness, skin eruptions, bronchial and kidney irritation and hemorrhages. Marked leucopenia with increasing anemia and death may occur.

X-Ray. The technic for treating leukemia by the Roentgen ray has been very variable and this may account to a certain extent for the variations in the results obtained. Boardman (*loc. cit.*) states that the x-ray has produced improvement in from 20% to 50% of the patients, that is, 50% to 80% of the cases are refractory. In most cases the long bones as well as the spleen have been radiated. In many instances, however, too little attention has been paid to the principles of cross fire and filtration (deep therapy). The principle of the so-called "cross-fire" is important for the successful application of radium or x-rays to large growths or to deeply seated lesions. The method was first described by Domenici and has since been elaborated by others, notably in the treatment of uterine fibroids by x-rays in the Freiburg clinic by Kroenig and Gauss. The aim is to concentrate as much of the action of the rays as possible in the deep-seated lesions with the least possible injury to the overlying skin. This may, in certain instances, be accomplished by employing small tubes of radium scattered throughout a tumor mass or by surface applications of heavily screened radium or x-ray to a large number of areas on the skin so that each area will not be exposed too long or too intensely. This might be the result in applying the radium to a single area for the time necessary to produce the desired effect on the underlying lesion. By this cross-fire method enormous doses, even 1,000 to 1,500 Kiemboeck units, may be applied to the deep lesion when not more than 20x could be safely put through one particular surface area. Pfahler uses from 4 to 40 surface areas and passes a full dose through each, making a total of from 80 to 800 units.

To produce any marked effect upon the deeper tissues it is necessary to use screens or filters to check the less penetrating rays which would otherwise be absorbed by the superficial tissues and cause marked destructive changes there before the less numerous and more penetrating rays could act on the deeper tissues. In order to obtain the most penetrating x-rays for this method of so-called "deep Roentgen therapy," the well known "Tiefenroentgentherapie" of the Germans, it is necessary to employ a hard tube of high degree of vacuum and an electrical apparatus of high voltage. The rays are not all of equal penetrability and it has been found that they are more homogeneous when the softer have been "filtered out" by an aluminum screen 3 millimeters in thickness. Certain roentgenologists also use a heavy piece of leather.

Radium. When radium is used for the treatment, screens or filters of lead 2 to 3 millimeters in thickness, of brass 1.2 millimeters or other heavy metals such as silver, gold or platinum,

allow the penetrating hard beta and gamma rays to pass and intercept the alpha and soft beta rays which would otherwise be absorbed and cause destructive changes in the superficial tissues. As the amount of the more penetrating rays is only a small proportion of the total activity, less than 5%, it is necessary in deep therapy to make exposures correspondingly long.

The principles of cross fire as well as deep therapy are made use of in the treatment of leukemia by surface applications of radium. The technic of such radium therapy may be illustrated by the striking effect of radium when applied in the proper manner to the surface over the enlarged spleen in cases of myelogenous leukemia. For this the following details have been elaborated.

The area of the enlarged spleen is carefully and plainly marked out with skin pencil or grease paint (of red or black color), the outline being obtained by percussion and palpation. The various landmarks, such as the costal margins, anterior superior spine and crest of the ilia, the symphysis pubis and the umbilicus are marked. The patient is photographed in an erect position in both front and side views (Figs. 1 and 2). A series of small squares 3 cm. in diameter, when the radium applicator is 2 cm. in diameter, are marked over the area of the enlarged spleen. It is important not to have the successive application areas too near together or the skin between them will be "burned" by the double dose. The squares thus marked out are numbered serially. A swathe of thin cotton cloth

is carefully fitted to the abdomen, and the outline of the spleen, bony landmarks and small squares is traced upon it. This swathe must be smoothly and accurately fitted and kept in accurate position by means of the landmarks above mentioned, for it is left in place during each single series of treatments. The purpose of this swathe is to avoid the irritation of repeatedly applying and removing the adhesive plaster which holds the radium applicator in place, for it has been found that the area which is being, or has been, radiated is particularly sensitive to injury from the repeated application and removing of adhesive plaster. Indeed, such added irritation may induce vesiculation or even superficial ulceration of the skin. Tracings of the areas and landmarks marked on the swathe are now made on tracing cloth, which serves as a chart for guidance in the following series of treatments. The general method of charting will be seen by the accompanying illustrations (Figs. 3, 4, 5 and 6). This affords a convenient and accurate method of recording the changes in the size of the spleen, and in avoiding injury to the overlying skin in the effort to give sufficient radiation to the underlying lesion. With the chart as a guide, the radium applicator, screened with 2 or 3 millimeters of lead, 15 to 20 thicknesses of filter paper, and wrapped in gauze, is now applied to each of the squares in the order indicated. It is necessary also to add at least as much filtration and protection to the *external* side of the applicator, for the patient may inadvertently rest the arm or leg on the applicator during sleep, and a severe burn may thus result. The filter paper is applied to avoid the irritating effect of the secondary rays from the lead, and the

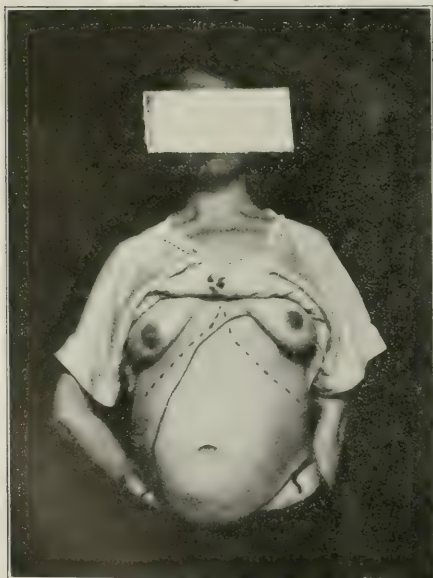


FIG. 1. Photograph of patient November 5, 1915, showing the outline of the enormously enlarged spleen and the prominence of the bony framework. The costal margins, crests and anterior superior spines of the ilia are also outlined. (Front view.)

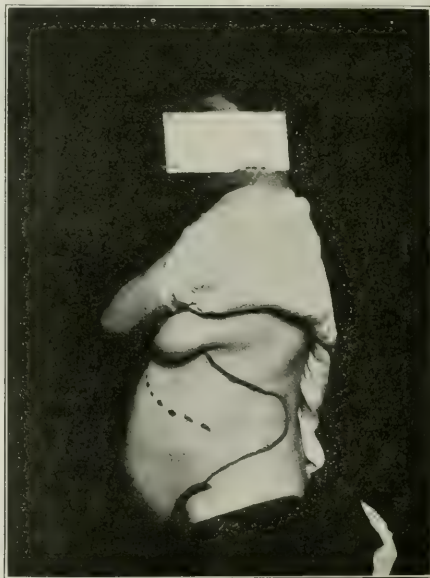


FIG. 2. Same as Fig. 1, November 5, 1915. (Side view.)

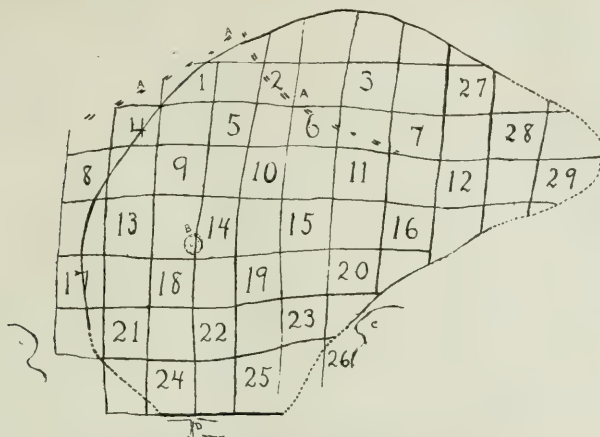


FIG. 3. Tracing, November 5, 1915, indicating the areas over the enlarged spleen exposed in the first series of radium treatments. The costal margins, umbilicus, crests and spines of the ilia and symphysis pubis are also indicated.

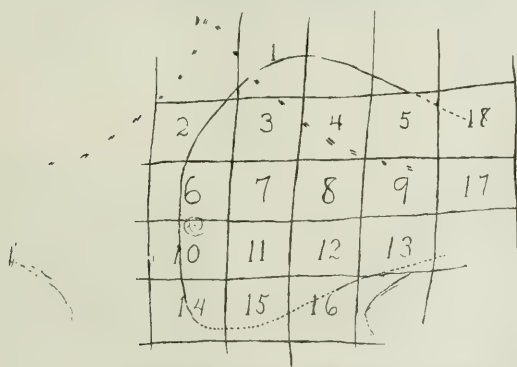


FIG. 4. Tracing, December 18, 1915, showing the areas exposed in the second series of radium treatments and the marked reduction in the size of the spleen.

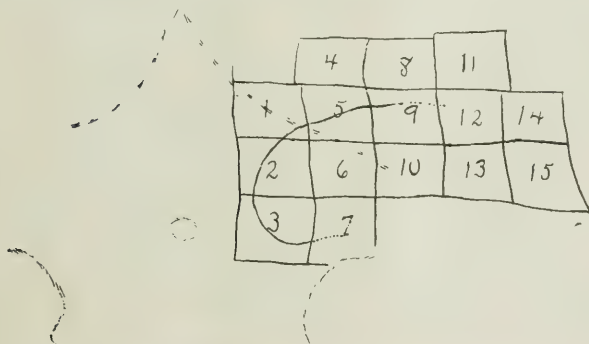


FIG. 5. Tracing, January 27, 1916, showing the areas exposed in the third series of radium treatments and the marked reduction in the size of the spleen.



FIG. 6. Tracing, April 15, 1916, showing the marked reduction in the size of the spleen which cannot be felt below the costal margin. The costal margin, the umbilicus, the ilia and the symphysis pubis are also indicated.

gauze adds to the comfort of the patient. If it is desired, the applicator may be rendered even more comfortable by substituting 25 to 30 layers of gauze instead of the filter paper. After from four to six weeks a second series of treatments is usually necessary, the interval between being determined by examinations of the blood and by the local condition of the skin. If the details here described are followed, however, no effect will be produced upon the skin other than very faint pigmentation after several series of radium treatments. The size of the spleen and the bony landmarks should be marked out, a new swathe fitted, and tracings made at each series.

Duration of Application and Amount of Radium Used. When from 50 to 60 milligrams of radium element or millicuries of radium emanation are employed, evenly distributed over a surface applicator 2 x 2 cm. in diameter, and the filtration and protection above mentioned is used, the radium may be left in each position from 4 to 6 hours—4 hours if there are 60 milligrams, 6 hours if there are 50 milligrams and if the filtration is 3 millimeters of lead. With this amount of radium and the above technic, it is possible for complete remission in leukemia to occur with three series of treatments. Amounts of radium, however, as small as 25 milligrams, even when this is in the form of a tube, have reduced the spleen to normal size, and have caused the characteristic improvement in the blood and in the general condition of the patient, but the time required is longer and the series of applications more numerous.

Discussion. In practical radiotherapy radioactive substances will in certain instances doubtless be preferable to the use of the Roentgen rays, particularly when there is necessity for the most precise localization, especially within the body or in cavities difficult of access and also when the condition of the patient or circumstances demand portability of the therapeutic agent for convenience or ease of treatment. The disadvantages of radium are its great expense for sufficient dosage in certain cases and also the possibility of loss of the radium salt by accident or theft. The latter may, however, be obviated

by the use of emanation, or radioactive gas evolved from a solution of radium, but the expense is thereby increased because of the necessity of retaining a physicist and equipping and carrying on a physical laboratory. When sufficient clinical experience has been gained in the application of the recent advances in the production of highly penetrating homogeneous x-rays of great volume by Coolidge and his co-workers, supplemented by careful scientific study of the physiological effects, it is believed that there will be in the majority of cases very little difference in the therapeutic value of the x-rays and radioactive substances. With the use of more powerful Roentgen apparatus, which is now being elaborated, physiological standardization is deemed of utmost importance in order that the best results may be obtained and the danger to patients obviated. It seems possible that similar results to those now produced by radioactive substances may be brought about in a much shorter time by the x-ray when the desired quantity and quality of the radiation may be measured in a rational manner so that the results obtained by one man may be compared with those of others and that there may be a repetition of results from day to day. From the preceding it will be seen that each source of radiation has certain advantages, as well as disadvantages. Unless in the near future the cost of production and the selling price of radium is greatly reduced it would seem, with the recent development in the x-ray that the latter will become of more general use in the treatment of many diseases.

It has been the practice of many roentgenologists to radiate the long bones as well as the spleen in cases of myelogenous leukemia. In the writer's experience, however, it has not been necessary or, indeed, seemed advisable, when radium is used as the therapeutic agent, to radiate the long bones. Surface applications of radium over the enlarged spleen in the manner above described produces most remarkable improvement with striking changes in the size of the spleen, the blood picture and the general condition of the patient. In the course of a few weeks, or in certain instances in three or four months, after radium treatment by surface application a spleen which filled almost the entire abdomen and extended well to the right of the median line and into the pelvis (Figures 1 and 2) and caused marked pressure symptoms has been reduced to normal dimensions so that it was not palpable below the costal margin (Figure 9). The white cells in the blood were reduced from 500,000 to 6,000, the immature forms being especially affected. The hemoglobin increased from 60 or less to 90%. Red blood corpuscles may increase from 2,000,000 to 5,000,000. The abnormal blood cells, myeloblasts and myelocytes disappear. Indeed, the blood picture returns almost to normal although some variation in the size of the red cells may per-



FIG. 7. Photograph of the patient January 31, 1916, showing the improved nutrition and the marked reduction in the size of the spleen. (Compare with Fig. 1, front view.)

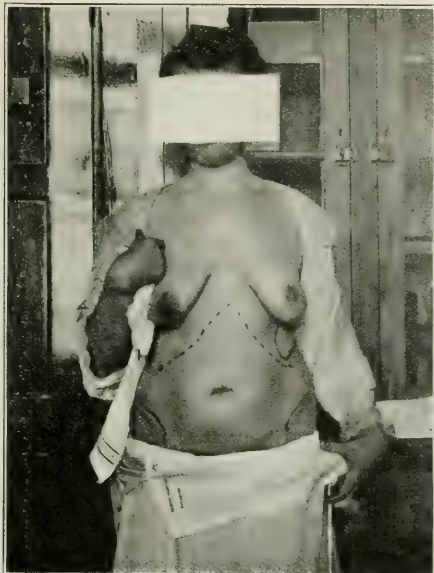


FIG. 9. Photograph of patient April 15, 1916, showing greatly improved nutrition and indicating the marked reduction in the size of the spleen which was not palpable below the costal margin.

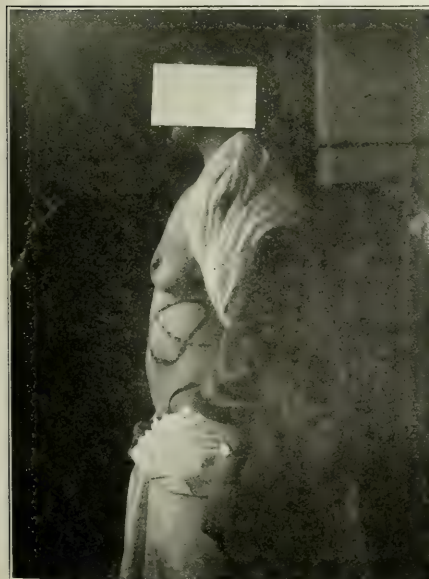


FIG. 8. Same as Fig. 7, January 31, 1916. (Side view.)

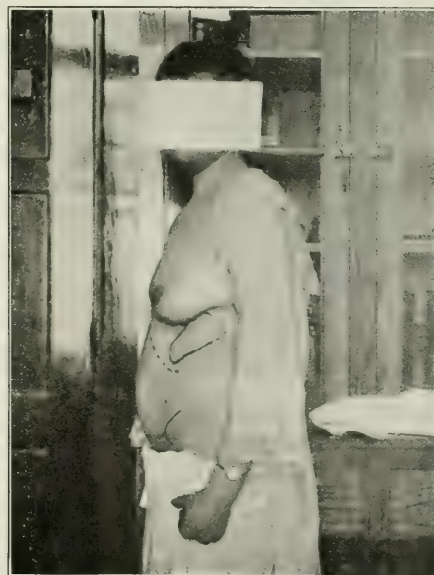


FIG. 10. Same as Fig. 9, April 15, 1916. (Side view.)

sist and there may be relative lymphocytosis. A pale, emaciated, anxious individual with prominent bony framework, stooping shoulders and enormously enlarged abdomen usually loses the anxious expression, becomes plump, the abdomen returns to normal size, the color and strength improve so that the patient may feel entirely well. The pathological condition, however, sooner or later is apt to relapse and response is less prompt in subsequent series of radium treatments. Some of the patients treated with radium have been followed for a number of years and kept in good condition by the occasional repeating of radium treatments. Certain cases, however, similarly treated have died of intercurrent infection or have succumbed to the original disease.

Striking changes are found in the urine of patients with myelogenous leukemia treated by radium. There is a marked increase in the total nitrogen, urea nitrogen and ammonia nitrogen. The uric acid is slightly increased. The total phosphates are increased remarkably. There is apparently no accumulation of uric acid in the blood, at least when the kidneys are in normal condition. Because of this marked increase in the metabolism it seems advisable to have the patient on a purin-free diet during and following the series of radium treatments. The changes in the metabolism of patients treated by radium resemble in certain respects those resulting from treatment by x-ray.

From the clinical point of view there is particular interest in the effect of radium upon cases which have proved completely refractory to x-ray and benzol treatment and of these the following record is an example.

Illustrative Case. The patient, Mrs. A., thirty years old, first consulted her physician April 11, 1915, for an obstinate, hacking, unproductive cough, which had at that time persisted for about a month. The cough was somewhat spasmodic, so much so that whooping cough had been suspected. She stated that she had also had "inflammation of the eyes," which had been treated by an oculist for three days with ice compresses. On April 11 general examination by the patient's physician disclosed a greatly enlarged spleen, and a blood examination two days later was as follows: red blood cells, 3,750,000; white blood cells, 280,000; hemoglobin, Sahli, 62%; polymorphonuclear leucocytes, 53%; lymphocytes, 4%; eosinophiles, 2%; large mononuclears, 2%; myelocytes, 39%.

The cough became so troublesome that it interfered with the patient's sleep, and the uvula was incised by a laryngologist, without effect, in the hope that it might improve the symptom. The patient was given sodium cacodylate, grains 3/4, subcutaneously, twice a week from April until July, but there was no improvement. The cough continued and the abdomen constantly grew larger. From April to June the waist increased three inches in circumference, and the abdomen continued to increase, until the first week in November, 1915, the patient stated that the enlargement and pressure sensations corresponded with those of

pregnancy at eight months (Figs. 1 and 2). The increasing pressure caused great annoyance from the lessened control of the bladder due to an old laceration at childbirth. Not only did the troublesome cough persist, but the patient became more and more short of breath and perspired freely. Perspiration was most noticeable in the legs. During the latter part of the summer and the early fall, the perspiration was so marked, the sheets were wet and the weakness much increased. In the early part of July the sodium cacodylate was stopped, and on July 15 x-ray treatment was begun and continued every other day until September 13. On September 18 the patient went to Baltimore, where she was seen in consultation with Dr. Louis Hamman, who, on September 23, sent to the patient's physician the following report:

"Mrs. A. came to Baltimore for an examination, and through Dr. H. H. Young was referred to me. I am sure that I will add nothing new in what I have to say; but I was anxious to have the opportunity to report to you the results of the examination.

"The general physical examination shows nothing abnormal except the pallor of the skin, and a tremendously enlarged spleen. The spleen reaches well beyond the middle line, and below descends into the pelvis. The blood shows: hemoglobin, 58%; red blood corpuscles, 2,912,000; white blood corpuscles, 460,000. The hemoglobin reading may be a little too high, since the 'muddiness' of the blood makes an exact reading difficult. A differential count of 500 cells gave the following proportion: polymorph. neut. neut., 53.2%; polymorph. eosinoph., 2%; polymorph. basoph., 2.6%; neutroph. myelocytes, 31.6%; eosinoph., 1.2%; lymphocytes, 1.4%; large mononuclear cells (including myeloblasts), 3%. In counting 500 cells, 2 normoblasts and 1 intermediate form of nucleated red cell were seen.

"Mrs. A.'s condition, therefore, is typical of the chronic form of myeloid leukemia.

"Mrs. A. states that she has been treated with the x-ray, and that she has had injections, which I presume were injections of some form of arsenic. Apparently, little improvement has followed the treatment, since the blood, according to her statements, has remained practically stationary. This being so, I think it is very important, while Mrs. A.'s general condition is still good, that treatment be undertaken more radically. The things that I would propose are these:

"First. I think that she should be absolutely in bed, if possible, out of doors. Since it would be difficult for her to be in bed at home and receive the proper x-ray treatments, she would be much better off in a hospital. Of course, the diet should receive appropriate attention.

"Second. The x-ray treatment should be continued. The exact method of application must be left to one experienced in x-ray work; but I think it should be pushed energetically.

"Third. I should advise a thorough and energetic course of benzol treatment.

"I outlined this plan to Mrs. A., and she was somewhat undecided whether she would enter the Johns Hopkins Hospital for treatment, or whether she would return and enter the Hospital at Albany. I told her that I would write you fully about my examination, and that it would be best for her to leave the decision whether she should remain at

home or should come to Baltimore for treatment, entirely in your hands. This she has decided to do, and will consult you as soon as she returns home."

On October 1 the patient entered the Albany Hospital, and x-ray treatment was continued without any effect, until October 25. In all, 37 areas were exposed, including practically all the long bones and the area of the enlarged spleen. Dr. Howard had immediate charge of the x-ray applications, under the supervision of Dr. John M. Berry, roentgenologist of the Albany Hospital. The technic was as follows:

Spark gap varied from six to eight inches; filter, 3 millimeters of aluminum; tube distance, 10 to 11 inches; current, five to eight milliamperes; and the time of each exposure varied from five to ten minutes.

Over the spleen a cone of 1 in. in diameter was used, over the long bones one of 3 inches in diameter. On October 25, through the courtesy of Dr. T. F. Doeschner, the patient's attending physician, I had the opportunity of studying the case. I would also express my thanks to Dr. Doeschner for the large number of blood examinations made by him. At this time the patient was sitting comfortably in bed, skin and mucous membranes were somewhat pale, the breathing was slightly rapid and shallow. The bony framework of the chest was prominent (see Fig. 1). The left border of cardiac dullness was $14\frac{1}{2}$ cm. to the left of the median line, the right border 2 cm. to the right of the median line. The upper border was in the second space. The first sound of the apex was rather short, and somewhat resembled the second. There were no murmurs. The lungs showed normal resonance and respiration throughout, except at the right base posteriorly, where, extending midway to the angle of the scapula, there was moderate dullness and a few fine moist râles. The upper border of the liver dullness anteriorly was at the fourth space, the lower border 2 cm. below the costal margin. The abdomen was enormously distended and about the size of pregnancy at eight months. A large mass, apparently the spleen, filled almost the entire abdomen except the right upper quadrant. In the left mid-axillary line the upper border of splenic dullness was at the seventh rib. The right border of the spleen on the level with the umbilicus was $7\frac{1}{2}$ cm. to the right of the median line and on a level with the anterior superior spine, the right border was 8 cm. to the right of the median line. The splenic notch was distinctly felt. Anteriorly, the mass could be felt extending into the pelvis (see Figs. 1, 2 and 3). Extremities: the reflexes were normal; no edema. Glands: there was no general superficial glandular enlargement. A radiograph of the chest, made by Dr. John M. Berry, showed a general haziness of the lungs and a faint shadow at the right base, apparently due to thickened pleura.

Past History. Patient had whooping cough when eight years old, measles at nine, and pneumonia with pleurisy at thirteen. When three years old she had chronic conjunctivitis, and has worn glasses for years. She has two children, six and two years old. Both are well. She has had no miscarriages. Catamenia was regular every five weeks before September, 1915. On September 5 was scanty, and since then has been absent. Average weight has been 155 pounds.

Family History. Father died of Bright's disease

at 57; mother alive and well. One sister died of spinal meningitis; two brothers alive and well.

Radium Treatment. At a consultation of Dr. Arthur W. Elting, Dr. T. F. Doeschner and Dr. Thomas Ordway with the patient's husband, the advisability of radium treatment was thoroughly discussed, and it was explained to her husband that, notwithstanding the fact that the former methods of treatment, including arsenic, x-ray and benzol, had not produced any improvement, it was possible that radium treatment by surface application over the spleen might induce a remission. It was carefully explained, however, as probable that even if the general condition improved and the spleen became reduced in size to approximately normal, that the condition would merely be regarded as a remission, and not in any sense a cure. It was suggested that if such a great reduction in the size of the spleen and improvement in the general condition of the patient occurred, splenectomy might then be considered. Owing to the courtesy and cooperation of Drs. James Ewing and R. S. Bosworth, of the General Memorial Hospital in New York City, radium emanation was obtained for treatment.

Radium Treatment, Series I. November 6, 1915, 6 p.m., 49.5 millicuries of radium emanation in square applicator, 2 cm. by 2 cm., was applied to the abdomen to area No. 1 (see Fig. 3) for four hours. It was applied successively to the consecutive areas for a similar time. The filtration used was one millimeter of silver, one millimeter of lead, twenty sheets of ordinary filter paper, ten layers of gauze, applied by adhesive plaster to a fitted swathe of cotton cloth. When twenty-two squares had been covered in the manner above described, the strength of the radium was approximately 25 millicuries. November 22, the general condition of the patient was good, the spleen somewhat smaller, and the abdomen was distinctly softer.

Radium Treatment, Series II. December 18, 1915, 60 millicuries of radium emanation were applied to the surface over the area of enlarged spleen (see Fig. 4), using the same technic as in series No. 1, except that three millimeters of lead was used for filtration, and the radium was left for six hours on each of the areas indicated on the chart. On this date the spleen was very much smaller, the general condition of the patient was excellent as to strength and color, and the troublesome cough had entirely disappeared. The second series of radium treatments was ended December 22.

Radium Treatment, Series III. January 27, 1916. Applications were started at 7 p.m. The applicator contained 61 millicuries of radium emanation at 12.15 p.m. of this same date. The spleen is very much smaller, and occupies only the left upper quadrant (see Fig. 5). The radium was applied to each square as indicated on chart for six hours. Three millimeters of lead was used for filtration, and the same amount of paper and gauze as in series No. 1.

January 31, 1916. Third series of radium treatments concluded. Gross photographs (see photographs Figs. 7 and 8) show the improved nutrition of the patient and marked diminution in size of the splenic area. Patient's weight, 143 pounds. Corrected weight, deducting five pounds for clothing, 138 pounds. White blood count, 28,000. General condition, excellent.

February 26, 1916. White count, 13,000. General condition, excellent.

April 15, 1916. Photographs taken (see Figs. 9 and 10) showing greatly improved nutrition and general condition of the patient, and marked reduction in the size of the splenic area (see tracing, Fig. 6). Spleen is no longer palpable below the costal margin. Weight, 156 $\frac{1}{4}$ pounds; corrected, for clothes, 151 $\frac{1}{4}$ pounds. Patient has gained 13 $\frac{3}{4}$ pounds in weight since January 31, 1916, notwithstanding the great reduction in the size of the spleen. The muscles are firm, color and strength are good, sleep, appetite and general condition are excellent. The cough, which had been exceedingly troublesome, and had not responded to local or general treatment, entirely disappeared a short time after the first series of radium treatments, and has not returned. The catamenia, which was regular every five weeks before September, was scanty on September 5, then it did not occur until November 25, after which it was regular every three to three and a half weeks.

Except for slight variation in size and shape of the red cells, the blood examination was practically normal. The red blood cells, 4,800,000; white blood cells, 5800; the hemoglobin, 90%; the polymorphonuclear leucocytes, relative number, 50.3%, absolute number, 2917; lymphocytes, relative number, 45.7%, absolute number, 2650; myelocytes, none; eosinophiles, relative number, 0.3%; large mononuclears, relative number, 3.1%; mass cells, relative number, 0.6%; number of cells counted, 322. No blasts seen.

May 15, 1916. General condition of the patient has continued to remain excellent, and she has been about actively and tended to her usual duties. As she has been upon her feet much more, owing to her improved general condition, the frequency of micturition, from lessened control of the bladder due to an old ulceration at childbirth, caused considerable annoyance, so that she entered the Albany Hospital on May 3, 1916, and was operated upon by Dr. John A. Sampson. The possible danger of general anesthetic was thoroughly discussed, and gas and oxygen were used instead of ether, because they seemed safer. Patient had considerable post-operative pain, but the wound of pelvic repair operation healed normally.

On May 15, the white cells were 8000 and the red cells 4,600,000.

June 15, 1916. Pain resulting from the operation mentioned under last note, is relieved, but patient is bothered with neuralgia, apparently due to teeth. White count, 6040; red count, 4,580,000; hemoglobin, 90%.

June 27, 1916. Owing to the persistent neuralgia, the patient's dentist, Dr. LeRoy S. Blamer was consulted, and on June 25 he found the condition to be due, apparently, to a crowned tooth, which had broken and exposed the nerve. As he was not able to secure satisfactory anesthesia by such local measures as cocaine or arsenic, the patient was given oxygen and nitrous oxide anesthesia and the nerve removed. The tooth was not extracted. After this the pain was relieved. There was, however, some oozing of blood between the tooth and the gum, and on June 27, when the patient was seen by the writer, there was oozing from the gum in this region and elsewhere to a slight extent. There were also numerous minute hemorrhagic puncta in groups scattered over the skin of the body, particularly on the lower part of the legs. The general condition of the patient, however, was excellent. She had been up and about until this

time, when she was put to bed. The spleen, which previously had not been palpable, was now distinctly felt 7 cm. below the costal margin, and extended almost to the median line. On pricking the lobe of the ear to make a blood count, the blood was a peculiar dark color and of watery consistency; it showed little tendency to clot. The white count was 24,600 and the red count 3,770,000. Urine: specific gravity 1.025, trace of albumin, few casts and polymorphonuclear leucocytes. Although the patient still felt perfectly well and the general condition was good, it seemed probable that there was a sudden recurrence of condition of the so-called hemorrhagic type of termination. Notwithstanding the probability that another series of radium treatment would avail little in such a crisis,

TABLE SHOWING TOTAL NUMBER OF RED AND WHITE BLOOD-CELLS AND PERCENTAGE OF HEMOGLOBIN.

DATE	RED CELLS	WHITE CELLS	HEMOGLOBIN PER CENT.
April 13, '15	3,750,000	280,000	62
" 20	3,680,000	286,000	60
May 1	3,650,000	290,000	60
" 20	3,600,000	292,000	60
" 30	3,620,000	310,000	59
June 10	3,640,000	360,000	61
" 22	3,560,000	392,000	60
July 1	3,680,000	440,000	60
" 8	3,690,000	480,000	60
" 27	3,890,000	431,600	62
Aug. 4	3,320,000	442,000	61
" 19	3,180,000	462,000	59
Sept. 10	3,090,000	460,000	58
" 23	2,912,000	460,000	58
" 30	2,850,000	450,000	58
Oct. 11	2,510,000	432,000	54
" 25	2,230,000	496,000	50
Nov. 2	2,750,000	470,000	50
" 3	2,800,000	467,000	49
" 4	2,810,000	445,000	50
" 6	2,790,000	495,000	50
" 9	2,930,000	446,000	50
" 13	2,910,000	430,000	51
" 16	3,090,000	406,000	54
" 18	2,900,000	325,000	52
" 20	2,980,000	264,000	54
" 23	3,180,000	258,000	55
" 27	3,020,000	256,000	59
" 30	3,370,000	220,000	68
Dec. 3	3,800,000	286,000	72
" 6	3,750,000	282,000	70
" 10	3,680,000	332,000	69
" 15	3,300,000	274,000	69
" 19	3,620,000	159,000	76
" 21	3,640,000	158,000	74
" 24	3,700,000	110,000	74
" 28	3,720,000	72,000	75
" 31	3,740,000	73,600	75
Jan. 4, '16	3,760,000	74,600	75
" 14	3,900,000	63,000	78
" 21	3,880,000	75,000	78
" 28	4,020,000	74,000	81
" 31	4,120,000	28,000	84
Feb. 5	4,090,000	17,600	83
" 8	4,100,000	17,800	84
" 11	4,180,000	14,920	85
" 16	4,240,000	13,800	87
" 22	4,380,000	14,400	88
Mar. 1	4,670,000	13,000	89
" 27	4,660,000	7,200	89
April 15	4,800,000	5,800	90
May 15	4,600,000	8,000	—
June 15	4,580,000	6,040	90
" 27	3,770,000	24,600	—

FIG. 11. Table showing the total number of red and white blood cells and the per cent. of hemoglobin.

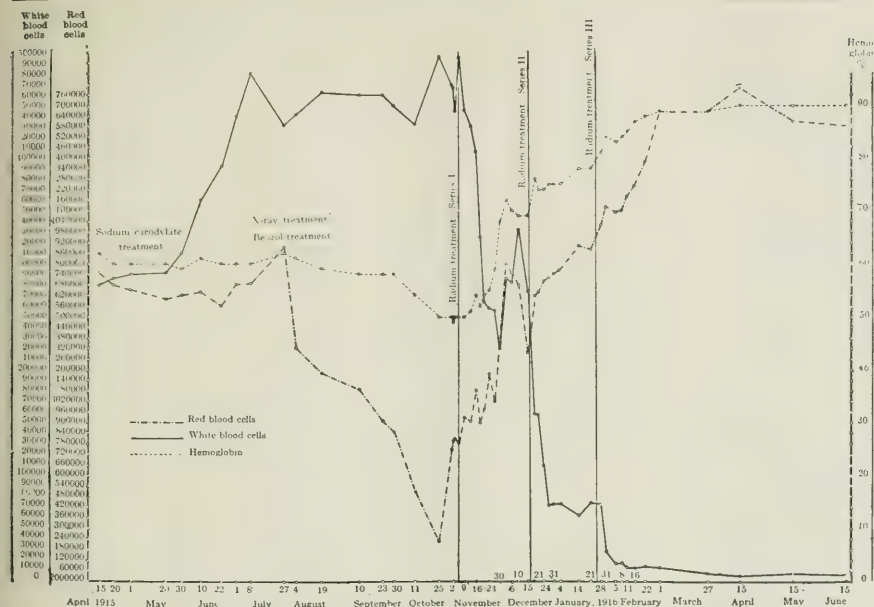


FIG. 12. Chart showing the total number of red and white cells and the per cent. of hemoglobin.

the patient was admitted to the Albany Hospital on July 1, and the fourth series of radium treatments was given by Dr. T. F. Doescher, with the same technic as in previous series. The bleeding from the gums had become general; there had been an abundant hemorrhage from the nose, which was controlled only by packing. The skin was covered with numerous ecchymoses, discrete and in "blotchy" areas. There was continuous discharge of blood from the uterus. Bleeding continued in spite of the administration of horse serum. On July 4, the patient complained of a very severe headache, which was different from headaches to which she had been subject for years. She finally fell asleep and could not be aroused, she had numerous generalized convulsions, the pulse became weaker, and the patient died on July 5.

BLOOD EXAMINATION.

COMPARISON OF TOTAL NUMBER OF WHITE CELLS AND RED CELLS AND OF THE PER CENT. OF HEMOGLOBIN BEFORE, DURING, AND FOLLOWING TREATMENT.

From April to June, 1915, the white cells varied from about 300,000 to 450,000, the red cells from 3,800,000 to 3,600,000, and the hemoglobin remained about 60%. During this time, therefore, the sodium cacodylate treatment above referred to produced no marked effect.

From July to November, 1915, the white cells increased to 500,000, the red cells for a few weeks gradually increased to 3,900,000, and then decreased markedly during August and September to 2,200,000, and the hemoglobin diminished to 50%. During the early part of this period the x-ray was begun, and later, because there was no apparent beneficial influence from the x-ray, it was combined

with benzol treatment. Shortly after the use of benzol, the marked reduction in the red cells, and the hemoglobin above mentioned, occurred, while the number of white cells was not diminished. Because of this, and from the fact that there were definite toxic symptoms (see above), benzol treatment was omitted, and although x-ray was continued for a short time, there was no apparent change in the white cells or hemoglobin. The first series of radium treatment was followed by a fall in the white cells from 495,000 to 159,000, a rise in the red cells from 2,790,000 to 3,620,000, and the hemoglobin from 50% to 76%. After the second series of radium treatments, the white cells fell to 74,000, the red cells and hemoglobin rose to 4,020,000 and 81% respectively. After the third series of radium treatments, the white cells fell to 5800, the hemoglobin rose to 90%, and the red cells to 4,800,000. The blood, numerically, remained normal for somewhat over three months, when there was a sudden, rapid increase in the size of the spleen, multiple hemorrhages in the skin and mucous membranes, and the white count rose to 24,600, and the red cells decreased to 3,770,000. The record of the number of red and white cells, and the percentage of hemoglobin is shown in tabular form in Fig. 11 and charted in Fig. 12.

COMPARISON OF THE RELATIVE AND ABSOLUTE NUMBER OF WHITE BLOOD CELLS.

Blood smears made upon slides were stained by both Wright's and Giemsa stains. In making the differential counts the following simplified classification was adopted for the purpose of clearness:

Myelocyte. The term myelocyte was used to include typical myelocytes with characteristic gran-

ules. The larger, non-granular myeloblasts, many of which, morphologically, it is difficult to distinguish from the large mononuclear leucocytes and cells transitional between these two forms, or pre-myelocytes, were included under the general term, myelocytes. Neutrophilic, basophilic and eosinophilic myelocytes were not counted separately.

Polymorphonuclear Leucocytes. With the polymorphonuclear leucocytes were also included the immature forms, some with granules and occasionally bi-lobed nuclei, the so-called metamyelocytes.

Eosinophil. Under the heading eosinophils, slightly immature forms were considered.

Lymphocyte. No differentiation between large and small lymphocytes was made.

During the early months of the study of this case no attempt was made to differentiate morphologically between certain myeloblasts and large mononuclear leucocytes. Indeed, this would seem very difficult, even with the aid of the oxidase reaction. In the latter part of the study, however, when all the myelocytes had disappeared following treatment, the term "large mononuclear leucocyte" was used. The so-called transitional and endothelial cells have been regarded as synonymous with large mononuclear leucocytes.

Mast Cells. Only typical mast cells were included under this term.

Blasts. While making the differential counts an attempt was made to distinguish normoblasts, the intermediate forms, and megaloblasts.

Following the radium treatment above described, the relative number of polymorphonuclear leucocytes increased from about 60% to 78%, and then diminished to 50%, whereas the absolute number fell from 299,475 to 2917. The relative number of lymphocytes rose from 2.3% to 45.7%. The absolute number of lymphocytes fell from 11,750 to 2650. The relative number of myelocytes fell from 36% to zero, and the absolute number of myelocytes fell from 178,200 to zero. There was little change in eosinophils, the relative number diminishing from 1.2% to .3%. The increase in the large mononuclear leucocytes from zero to 3.1% is in part only apparent for the reasons above described. Mast cells increased from zero to 4.3% and later diminished to .6%. The blasts, which were present as normoblasts, intermediate forms and megaloblasts, from 3 to 6 in counting between

500 and 600 cells, entirely disappeared. The records of the comparison of the relative and absolute number of white cells are tabulated in Fig. 13 and charted in Fig. 14.

Morphological Appearance. Blood smears at the beginning of radium treatment were typical of myelogenous leukemia (see Fig. 15), showing large numbers of myeloblasts and myelocytes. The white count was 495,000, the polymorphonuclear leucocytes relative number 60.5%, absolute number 299,475, myelocytes relative number was 36%, absolute number 178,200.

During radium treatment the myelocytes diminished rapidly, the blood smears showing an apparent increase in polymorphonuclear leucocytes and a marked diminution in myelocytes (see Fig. 16). The total white count was 159,000, the relative number of polymorphonuclear leucocytes 65.3%, and the absolute number was 103,827. Relative number of myelocytes was 28% and the absolute number 44,520.

Following the three series of radium treatments, the relative and absolute numbers of white and red cells and the per cent. of hemoglobin were normal, and all abnormal white cells had disappeared. The red cells, however, even at the height of the patient's improvement, continued to show considerable variation in size and shape (see Fig. 17).

Uric Acid in the Blood. Chemical examination of the blood obtained on November 5, 1915, the day before the radium treatment, showed 3.78 milligrams per 100 cc. of blood. Similar examination made of blood obtained November 27, 1915, three weeks after the treatment by radium had been commenced, showed 2.48 milligrams per 100 cc. of blood. A third examination of blood obtained on March 3, 1916, about five weeks after radium treatment had been concluded, showed 3.5 milligrams of uric acid per 100 cc. of blood. From the above it is evident that there is little change in the uric acid in the blood compared with the increase in the uric acid in the urine. (See below.)

Chemical Examination of the Urine.* Patient was put on a purin-free diet before, during, and for considerable periods after each series of radium

*I am indebted to Dr. Arthur Knudson, Professor of biological chemistry, Albany Medical College, under whose direction the chemical examination of the urine was made, in association with Mr. Theodore Erdos. A detailed report of the urine examination will be the subject of a separate article by Professor Knudson and Mr. Erdos.

TABLE SHOWING COMPARISON OF RELATIVE AND ABSOLUTE NUMBER OF WHITE BLOOD CELLS.

DATE	POLYM.		LYMPHOC.		MYELOC.		EOSIN.		LARGE MONO.	MAST C.		NO. CELLS COUNTED	NUMBER BLASTS SEEN N-I-M
	(REL.)	(ABS.)	(REL.)	(ABS.)	(REL.)	(ABS.)	(REL.)	(REL.)		(REL.)	(REL.)		
April 13, '15	55.6	155,680	2.4	6,720	40.1	112,280	1.9	0	0	636	7-1-0		
July 26	60.1	259,391	1.7	7,337	36.1	155,807	2.1	0	0	664	4-0-2		
Sept. 23	60.8	279,680	1.4	6,440	35.8	164,680	2.0	0	0	500	2-1-0		
Nov. 2	59.4	279,180	2.5	11,750	36.5	171,550	1.6	0	0	636	2-0-1		
" 6	60.5	299,475	2.3	11,385	36.0	178,200	1.2	0	0	795	4-1-0		
" 9	62.2	277,412	3.7	16,502	33.4	148,964	.7	0	0	539	2-1-0		
" 13	67.2	274,960	1.8	7,740	29.5	126,650	1.1	0.3	0.1	669	0-0-0		
" 16	57.5	233,450	2.9	11,774	38.3	155,498	1.3	0	0	611	6-0-1		
" 23	62.9	162,282	2.4	6,192	28.0	72,240	2.4	0	4.3	332	4-0-0		
Dec. 3	73.2	209,352	2.5	7,150	21.5	61,490	1.0	0.7	1.1	719	8-0-0		
" 20	65.3	103,827	4.6	7,314	28.0	44,520	1.1	0	1.0	694	3-0-2		
Jan. 4, '16	64.3	47,582	17.4	12,876	12.5	9,250	1.0	1.7	3.1	478	0		
Feb. 5	78.6	13,833	15.2	2,675	1.3	982	0.1	4.6	0.2	785	0		
Mar. 7	65.6	8,528	29.6	3,848	0.3	39	0.7	3.8	0	287	0		
" 27	51.4	3,700	44.7	3,218	0	0	1.2	2.6	0.1	535	0		
April 15	50.3	2,917	45.7	2,650	0	0	0.3	3.1	0.6	322	0		

FIG. 13. Table showing comparison of the relative and absolute number of white cells.

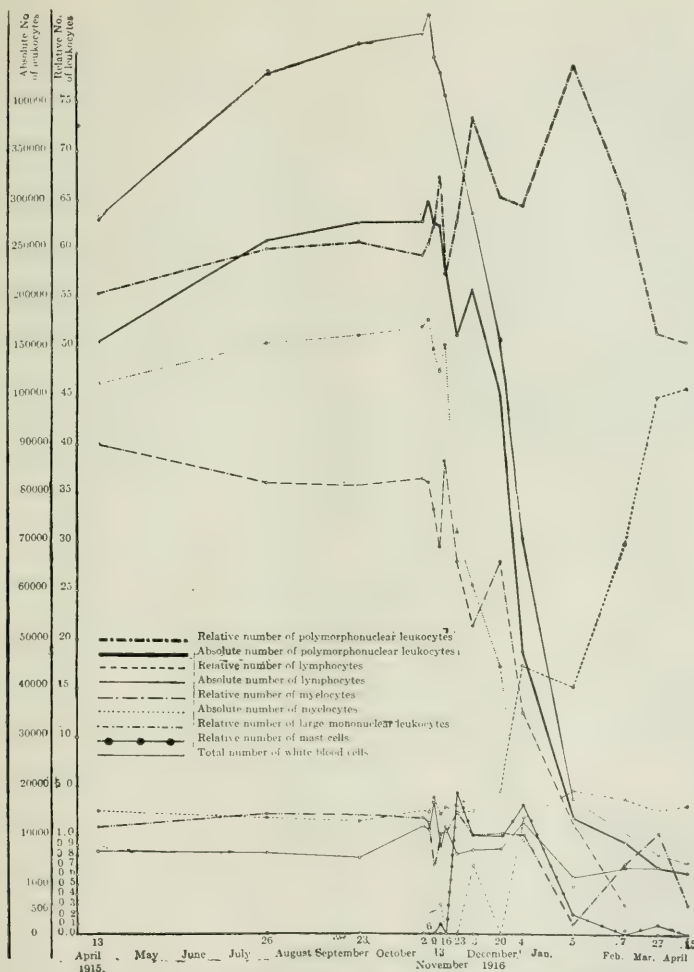


FIG. 14. Chart showing comparison of the relative and absolute number of white blood cells.

treatment. After the first series of radium treatment, the total nitrogen, urea nitrogen, and ammonia nitrogen excretion began to increase immediately, and at the end of seven days the excretion reached a maximum, and was more than double. After the seventh day, there was slight decrease, and then remained more or less constant. The uric acid output showed a slight increase for the first seven days and then remained about the same, with several wide variations. The elimination of total phosphates showed most remarkable result. The phosphates increased immediately after the first day of treatment. At the end of the seventh day the excretion had been triple. There was then a gradual fall until the next series of radium treatments. The fall in excretion of phosphates did not reach normal, but remained about twice normal.

After the second series of radium treatments, the total nitrogen, urea nitrogen, ammonia nitrogen and uric acid showed a similar increase in excretion for six or seven days. The phosphate excretion likewise increased.

After the third series of radium treatments, the increased excretion of the various substances mentioned was similar. It is interesting to note that after all three series of radium treatments, the increase in excretion continued for about six or seven days after the beginning of treatment and then dropped. The phosphates elimination showed the greatest increase.

Summary. Results similar to those above described in the treatment of leukemia have been reported by various observers who have used the

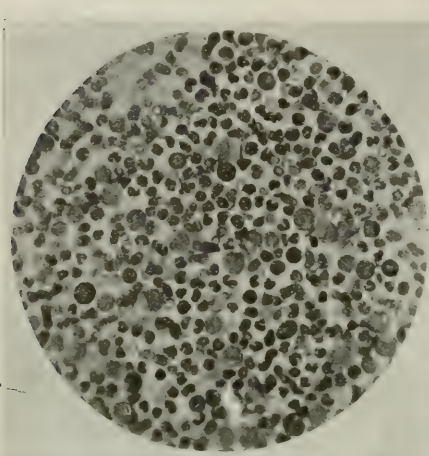


FIG. 15. Photo-micrograph of blood smear November 6, 1915, showing large numbers of myeloblasts and myelocytes. The white count was 485,000, the polymorphonuclear leucocytes' relative number was 60.5%, absolute, 299,475; myelocytes' relative number was 36%, and the absolute number, 173,200.

x-ray for treatment, particularly when similar methods were used and the applications made over the enlarged spleen. In the majority of cases, however, the long bones have also been rayed. It is to be noted that in the surface applications of radium the results were obtained without radiating the long bones; in fact, in a case in which the long bones were radiated there was apparently an increase rather than a diminution in the white cells. It is also believed that

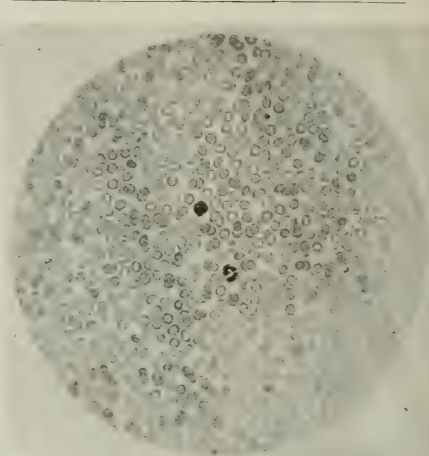


FIG. 17. Photomicrograph of blood smear March 27, 1916. Total number of white cells, 7,200, relative number of polymorphonuclear leucocytes, 61.4%, absolute number, 3,700; myelocytes, relative number, none, absolute number, none. Red cells show considerable variation in size and shape.

the results are more prompt by the radium treatment than by the x-ray as usually employed and no case has been accompanied by toxic symptoms, although there is a marked increase in the endogenous purin metabolism. On a purin-free diet, uric acid, urea, total nitrogen, phosphates and acidity of the urine are remarkably increased by radiation. Because of this it is advisable to have a careful examination of the urine before treatment is begun and to place the patient during and after treatment on a purin-free diet. The recent developments in the x-ray by Coolidge and his co-workers and the resulting accurate standardization of the dosage, and the increased intensity and penetrating power make it probable that the results of x-ray treatment will be equally as good as those obtained by radium.

Sixty milligrams of radium or millicuries of emanation used by the technic above described would seem most satisfactory. Twenty-five milligrams of radium element, however, have produced similar results although the number of applications was greater and the response much more gradual. In the case above detailed only three series of applications were necessary before the blood returned to normal. In other instances with less perfected technic six or more series have frequently been necessary.

Many of the cases which responded promptly to radium applications over the spleen had previously proved refractory to x-ray and benzol treatment. Although the results in the radium treatment of leukemia are most striking in the chronic myelogenous variety in certain cases of lymphatic leukemia, the effects are almost equally as good. In the acute, fulminating

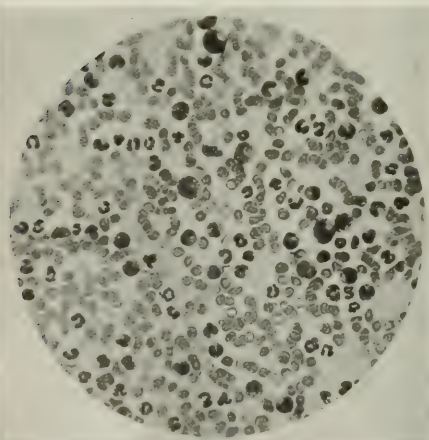


FIG. 16. Photo-micrograph of blood smear December 20, 1915, showing apparent increase in polymorphonuclear leucocytes and the marked diminution in myelocytes. The total white count was 159,000, relative number of polymorphonuclear leucocytes, 65.3%, and the absolute number, 103,827. Relative number of myelocytes was 28%, and the absolute number, 44,520.

leukemias radium treatment is of no value. In some cases of chronic myelogenous leukemia, however, even when the general condition is very poor at the start, there may be marked temporary improvement. It must be understood, however, that the results should be regarded at the present time merely in the light of palliation and not as a cure. It is hoped, however, that future research will at least increase the duration of these remissions. It is suggested that the spleen be removed during the period of most marked improvement, at the height of a remission when the spleen is of normal size and the general condition of the patient excellent. Although the treatment must not be considered at the present time as curative, from the results obtained it is the best form of treatment now at our disposal.

The remissions last from months to years. In the case above detailed there was a remission of from six to eight months during which the patient was entirely free from symptoms of the disease. In other instances, remissions have lasted from two to three years, although there is always a tendency for the disease to relapse, and each recurrence responds less promptly and less completely to radium treatment. During the remissions, patients may feel entirely well and assume the usual duties connected with their work and social affairs. They are, however, very susceptible to intercurrent infections. A case of fatal pneumonia occurred at the height of the improvement in the remission. Rapid recurrence and death by small gradual or massive hemorrhages or from weakness may occur after benzol and x-ray treatment and also, as in the case above described, after a remission produced by radium. Indeed, such rapid termination is common in untreated cases.

Conclusions. I. Surface applications of radium in leukemia produce striking, indeed remarkable, improvement in (a) the blood picture which becomes almost normal, (b) in the size of the spleen and glands, which are reduced almost to normal, (c) in the general condition of the patient who from an emaciated and weak condition may become plump and strong. II. The duration of remission is variable, it may last from months to years. III. The results of radium treatment are *not* regarded as *curative*. It is believed to be, however, the safest as well as the most prompt palliative measure in cases of chronic leukemia whether *refractory* or not to benzol or x-ray treatment. From the results of radium therapy in leukemia it is believed to be the best form of treatment now at our disposal.

REFERENCES.

- ¹ Graham, C. F.: Journal A. M. A., Vol. lxiv, p. 505, February 6, 1915.
- ² Renon, Degrais and Tournemelle: "Radiumthérapie de la Leucémie Myéloïde. Essai de comparaison entre la Radiumthérapie et la Radiothérapie de Cette Affection." Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris, 1914, 3, Série 37, p. 526.
- ³ Report of Radium Institute of London, Jan. 1, 1914, to Dec. 31, 1915, p. 38.
- ⁴ Von Noorden, C., and Falta: Medizinische Klinik, No. 39, 1911.
- ⁵ Falta, Krisner and Zehner: Wiener klin. Woch., No. 12, 1912.
- ⁶ Boardman, W. W.: California State Jour. of Med., Vol. xiii, No. 9, September, 1915.

A METABOLISM STUDY OF A CASE OF LEUKEMIA DURING RADIUM TREATMENT.*

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In conjunction with a careful clinical study of a case of myelogenous leukemia treated by surface application of radium it was thought it might be of especial interest to study the metabolic output in the urine of the patient. In the literature there are numerous reports of the metabolism in leukemia cases, some without treatment, some during various treatments, among them the action of x-rays, but none, as far as the authors know, of the study of a case treated by surface application of radium.

Von Moraczewski¹ in a study of a case of chronic leukemia, concluded that leukemia is a nitrogen and phosphorus disease and found that almost all constituents, especially phosphorus and nitrogen, in the food, were retained abnormally, because of a lack of katabolism.

In "splenomedullary leucocythemia" Milroy and Malcolm² likewise observed an absolute diminution of phosphorus excretion. These observers also noted that the proportion of alloxuric nitrogen (uric acid and bases) to total nitrogen was increased. Later³ in "lymphatic leucocythemia" they found a marked diminution in the absolute amount of phosphorus excreted. In this case which they studied the uric acid and bases were hardly affected. In a case of "medullary leucocythemia," where the number of leucocytes was rapidly falling, the phosphorus excretion was found to have undergone no diminution, while the uric acid and the bases were diminished. White and Hopkins⁴ observed no relation between leucocytosis and the excretion of the products such as phosphorus and alloxuric bodies which result from katabolism of nuclein.

In complete balance experiments with cases of lymphatic and myelogenous leukemia Stejskal and Erben⁵ found in one chronic lymphatic case a marked nitrogen retention, indicating, according to them, diminished power of oxidation. In the case of myelogenous leukemia there was a slight retention of the nitrogen and phosphorus. Y. Henderson and Edwards⁶ in a case of lymphatic leukemia which they studied over a long period (6½ months), found that, notwithstanding, an enormous leucocytosis (175,000-380,000 per cu. mm., of 96% lymphocytes) and in spite of alternation of periods of great increase and marked diminution in the number of circulating corpuscles, the excretion of phosphorus and uric acid was at no time excessive. They believe leucocytosis to be due

* Clinical study of this case is reported by Dr. Thomas Ordway in a separate article.

not to general increase in nuclein metabolism but to failure in normal destructive metabolism. In the course of their study they observed two periods; in the first, nitrogen was subnormal, uric acid slightly above normal, and phosphorus distinctly subnormal; in the second period there was a distinct diminution of nitrogen, an increase of uric acid, and a further great reduction in phosphorus.

Henderson and Edwards, by the changes in the amount and the proportion of urinary constituents during their own much more protracted observations, harmonize the conflicting observations of Milroy and Malcolm, Von Morawzewski, and White and Hopkins by showing that their apparent differences are probably due to the fact that these experimenters made their observations at different stages in the progress of the disease.

Symmers⁷ found the excretion of organic phosphorus in the urine pronounced in lymphatic leukemia.

In a case of myeloid leukemia treated by Roentgen rays Lossen and Morawitz⁸ found that the volume of urine was diminished, that the total nitrogen, uric acid and phosphorus excretions were lowered, and that the number of leucocytes was diminished (350,000-212,000). On continued treatment the uric acid content decreased, the nitrogen elimination remained the same and the phosphorus content increased. König⁹ in myeloid leukemia under the influence of Roentgen rays found that the uric acid excretion increases parallel with the retraction of the spleen and the breaking up of the leucocytes, and that the uric acid excretion is a positive measure of cell breakage, but not an index to the extent of the cell destruction. Ammonia and phosphates show at times an increase generally parallel with nitrogen increase and also with the betterment in the leukemic symptoms.

In a metabolism study of leukemia under the influence of Roentgen rays, Musser and Edsall¹⁰ found that the phosphorus metabolism is of particular interest. In conditions where leukemia symptoms are progressing, there is a constant constriction of tissues that are rich in phosphorus and, hence, they believe there will be a retention, and since leukemia tissues contain large amounts of phosphorus the retention is relatively large. The excretion of nuclein products of disintegration of uric acid, purin bases, and phosphates is likely to be high, due to a large amount of nucleins in leukemia tissue. By the influence of Roentgen rays in three-day periods the nitrogen excretion increased about 70%, the uric acid about 60%, the purin bases about 260% and the phosphates about 200%. The authors explain this action of Roentgen rays as due to accelerating autolysis.

EXPERIMENTAL.

Since the clinical aspects of this case are discussed in a separate paper by Dr. Ordway,

no description of it is needed here other than to say that the patient was a woman, 30 years old, suffering from myelogenous leukemia. The spleen was greatly enlarged and the white count was 495,000 at the beginning of radium treatment.

The treatment consisted, briefly, in applying 50-60 millicuries of radium emanation (50-60 mg. of radium element) to small areas on the abdomen, which was marked off, indicating the outlines of the enlarged spleen. Each area was rayed for four hours during the first series and six hours during the second and third series of treatments. Each series of treatments required three to four days to cover the surface over the area of the enlarged spleen. Between each series of treatments about four to six weeks were allowed to intervene, the time being determined by the examination of the blood.

No attempt was made carefully to regulate the diet, although a record of food taken was kept and found to vary within narrow limits. The diet was practically purin free during and following the series of treatments. It consisted chiefly of bread, cereal, potatoes, milk, butter, eggs, fruit, and, occasionally, beef, chicken, and a few vegetables.

The urine was collected for 24-hour periods in thymolized bottles and brought to the laboratory for analysis immediately after the 24-hour period was up. At the beginning of the first series of treatments the urine was collected daily from November 6 to 13, inclusive, and after that date it was collected on an average of three times a week except during two periods of a week each when it was discarded because of menstruation.

Total nitrogen was estimated by the modified Kjeldahl method, urea by the urease method, ammonia by Folin's method, uric acid by Benedict's modification of Folin's colorimetric method, creatinin by Folin's method, phosphoric acid by titration with uranic acetate, and the acidity by Folin's method. The urine was at all times during the treatment free from albumen and sugar.

The results of the observations during and following the three series of radium treatments are given in the accompanying table with a report of the white and red blood count taken from Dr. Ordway's paper. Unfortunately, we were unable to obtain the urine several days before the series of treatments began so as to have a preliminary period to compare with the action of radium. However, the first day's sample of urine was partly collected during no radium treatment, as treatment was not begun until 6 p. m. and most likely radium had little effect in that sample of urine, the period of which was up at 8 a. m. the next morning. Also, in taking into consideration the results of a number of investigators, it is noted that the period during no effective treatment or increase in leukemia symptoms is characterized by re-

TABLE OF URINARY ANALYSES AND BLOOD COUNT

Date	Volume	Sp Gr	Total N	Urea N	Ammonia N	Creatinine N	Acid Anal.	Total acidified N/10 HCl	Total Phosphate P ₂ O ₅	Red blood cells	White blood cells
1915	cc.		gm	gm	gm	gm	gm	cc	gm		
Nov 6	First series of		Radium	Treatments							
	802	1.017	5.440	3.184	0.265	0.333	0.078	174	0.758	2,790,000	495,000
7	810	1.017	5.530	4.440	0.344	0.346	0.095	251	0.803		
8	900	1.017	6.280	4.549	0.376	0.382	0.187	256	0.847		
9	1030	1.016	7.054	5.373	0.405	0.379	0.189	334	1.086	2,930,000	446,000
10	1053	1.018	6.906	5.438	0.316	0.310	0.193	354	1.175		
11	1090	1.018	10.190	8.442	0.577	0.552	0.215	403	1.66		
12	1210	1.017	11.890	9.045	0.676	0.613	0.229	600	1.96		
13	1057	1.017	9.375	7.094	0.594	0.507	0.168	413	1.826	2,910,000	430,000
16	1040	1.014	8.508	5.325	0.728	0.305	0.206	330	1.118	3,090,000	406,000
18	1060	1.014	8.324	6.690	0.811	0.356	0.224	389	1.334	2,900,000	325,000
20	1088	1.012	6.176	5.118	0.589	0.341	0.158	256	1.152	2,980,000	269,000
22	1500	1.01	7.085	6.331	0.480	0.435	0.294	247	1.401		
27	1200	1.015	7.537	6.093	0.51	0.379	0.284	367	1.2	3,020,000	
Dec 8	920	1.016	8.528	6.418	0.698	0.364	0.193	383	1.152		
10	1175	1.016	9.220	7.633	0.698	0.509	0.243	358	1.21	3,680,000	332,000
18	Second series of		Radium	Treatments							
24	800	1.02	9.177	5.539	0.553	0.339	0.247	374	1.886	3,700,000	110,000
28	1275	1.016	10.941	9.509	0.663	0.439	0.262	475	3.89	3,720,000	72,000
Jan 4	1125	1.019	10.570	8.372	0.595	0.418	0.227	467	2.02	3,700,000	74,000
10	800	1.023	6.490	4.821	0.495	0.315	0.177	286	1.393		
12	950	1.022	7.626	4.852	0.418	0.377	0.202	256	1.215		
14	1040	1.018	6.938	5.194	0.427	0.411	0.190	289	1.420	3,420,000	630,000
17	900	1.025	8.256	6.189	0.385	0.420	0.249	292	1.323		
19	940	1.018	7.343	5.609	0.380	0.435	0.251	237	1.276		
22	1410	1.017	9.093	7.586	0.369	0.388	0.296	3.854			
26	1135	1.023	11.045	9.579	0.371	0.399	0.289	416	2.032		
27	Third series of		Radium	Treatments							
Feb 2	1000	1.02	9.430	8.338	0.605	0.526	0.361	350	2.004		
4	1220	1.021	11.450	9.778	0.635	0.437	0.169	448	3.35		
8	1020	1.028	10.320	8.669	0.206	0.430	0.21	416	2.339	4,100,000	178,000
10	1120	1.022	8.862			0.396	0.229	1.890			
12	1190	1.008	8.332				0.186	2.048			
17	1175	1.024	10.754	7.776	0.420	0.442	0.173	331	2.241		
19	1100	1.022	9.362	8.008	0.461	0.466	0.181	289	1.689		
22	1087	1.025	12.219				0.195	430	2.103	4,360,000	14,400
29	1100	1.024	11.860	9.317	1.532	0.414	0.281	434	2.263		
Mar 3	1210	1.024	12.439			0.404	0.294	320	1.247		

tention of nitrogen, phosphoric acid and uric acid.

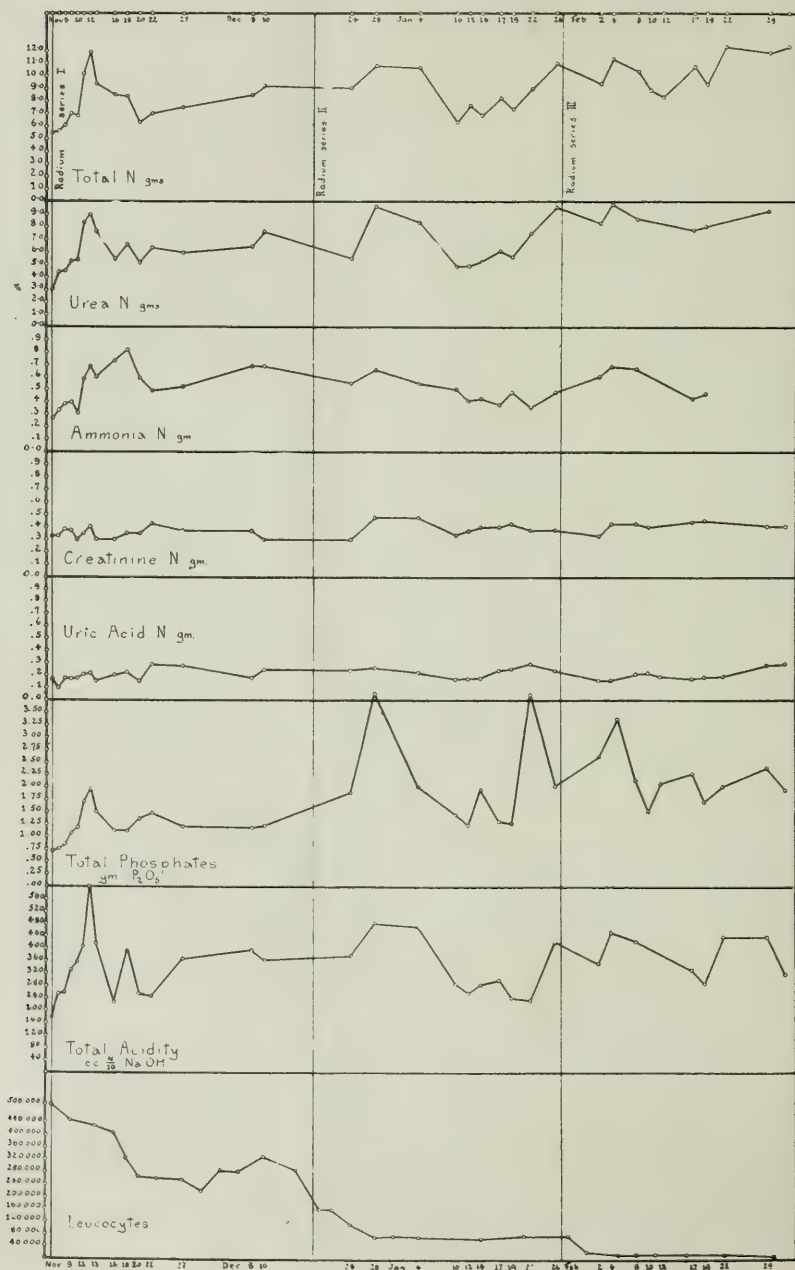
Examining the table of analyses it is noted that the volume of urine increased 50% in the first seven days from the beginning of treatment. The total nitrogen, urea nitrogen, and ammonia nitrogen excretions likewise showed remarkable increases in the first seven days. The total nitrogen increased about 115%, urea nitrogen 140%, and ammonia nitrogen 150%. The uric acid nitrogen increased less than any of the other nitrogen excretions, only about 28%. We would expect the uric acid to increase considerably more since the tissue which is disintegrated is rich in nuclein material and should be among the products of disintegration. It may be that the uric acid is broken down further, due to radium having a disintegrating action on uric acid as it does in vitro. According to Sarvonat¹¹, radium emanation decomposes uric acid; oxalic acid is found among the products of decomposition. Another theory why uric acid may not be increased so much is that

of Gudzent and Lowenthal¹². They found that radium emanation has a pronounced influence on purin metabolism. The action being due to activation of those ferments which are responsible for building up or for cleavage of uric acid according to which ferment action predominates. In the above instance in which we would expect the uric acid to increase considerably it may be possible that the cleavage ferment is activated and in which case it would break up the uric acid.

Coincident with the increase of the nitrogen constituents, the total acidity and phosphates show a very decided increase; the former is increased by about 235% and the latter 174%. The total acidity was parallel, to a certain extent, with the excretion of the total phosphates.

After the seventh day of the first series of treatments all of the excretory products show a slight drop. However, these excretory products, in spite of this drop, are at a higher level at the time of the next series of treatments than at the beginning of the first series.

Charts showing results of Urinary Analyses and Blood Count



In the second series of treatments which began December 18 we were unfortunate in not getting any samples of urine for several days on account of the menstrual period. However, it seems that the same effect occurs as in the first series—an increased excretion. The total phosphates reaching in this series on the tenth day an increase of 445% over the excretion for the first day of the experiment. The high level of excretion seems to occur about the tenth day compared to the seventh day in the first series. There is in this series a slight drop in the excretions after the tenth day and then later a rise so that at the beginning of the third series of treatments the excretions are again at a higher level. It may be that the radium action is still effective at this date or that there is very little or no retention of products at this stage of the disease.

The third series of treatments began January 27. Since excretions were high just before the treatment began there does not appear a decided increase in any of the constituents except the phosphates on the eighth day after the beginning of the third series.

It is interesting to note in the first series of radium treatment that the increase in the excretory products in the urine begins immediately and reaches a maximum in about seven days while the drop in white blood count is more gradual in that time. The greatest drop in the number of leucocytes occurred between the twelfth to fifteenth day after treatment.

It is also very striking that throughout the series of treatments the uric acid excretion is not excessive at any time, which might be expected to run more or less parallel with phosphorus excretion.

The charts showing the results of the urinary analyses and blood count also aid in showing the changes brought about by the radium treatment and are more or less self-explanatory.

CONCLUSIONS.

The excretions of total nitrogen, urea, ammonia and phosphates are enormously increased immediately after the action of radium.

The uric acid output is only slightly increased compared to the other nitrogenous constituents.

Surface applications of radium over the spleen accelerates the disintegration of nuclein tissue, resulting in the above increases. The uric acid which would be expected to be formed by disintegration of nuclein is probably broken up further so that it is not increased.

The phosphates show the most remarkable results, increasing as high as 400%, at times, over the excretions at the beginning of treatment.

REFERENCES.

- ¹ Von Morawczewski: Stoffwechsel bei Leukämie und Pseudoleukämie. *Archives Path. Anat. u. Physiol.*, 1898, 159, 221.
- ² Milroy and Malcolm: The Metabolism of the Nucleins under Physiological and Pathological Conditions, pt. I. *Jour. of Physiol.*, 1898, 22, 217.
- ³ Milroy and Malcolm: The Metabolism of the Nucleins under Physiological and Pathological Conditions, pt. II. Further Observations on Excretion in Leucocythemia. *Intracellular Metabolism in the Granular Leucocytes. Jour. of Physiol.*, 1899, 25, 105.

- ⁴ White and Hopkins: On the Excretion of Phosphorus and Nitrogen in Leukemia. *Jour. of Physiol.*, 1899, 24, 42.
- ⁵ Stejskal and Erben: Klinische-chemische Studien: II Stoffwechsel bei lymphatisches und lional-myelogenes Leukämie. *Zeit. Klin. Med.*, 1900, 39, 151.
- ⁶ Y. Henderson and Edwards: Nuclein Metabolism in Lymphatic Leukemia. *Amer. Jour. of Physiol.*, 1903, 9, 417.
- ⁷ Symmers: A Contribution to the Knowledge of the Excretion of Organic Phosphorus in the Urine in Certain Pathological Conditions. *Jour. Pathol. and Bacteriol.*, 1904, 10, 159.
- ⁸ Lassen and Morawitz: Chemische und histologische Untersuchungen an bestrahlten Leukämikern. *Deuts. Arch. Klin. Med.*, 1905, 83, 288.
- ⁹ Königer: Der Einfluss der Röntgenbehandlung das den Stoffwechsel bei chronischer myeloider Leukämie. *Deut. Arch. Klin. Med.*, 1906, 87, 31.
- ¹⁰ Musser and Edsall: A Study of Metabolism in Leukemia under the Influence of the X-ray. *Univ. of Penn. Med. Bull.*, 1905, 13, 174.
- ¹¹ Sarvonat: Action of Radium Emanation on Uric Acid. *Compt. rend. Soc. Biol.*, 1912, 72, 1020.
- ¹² Gudzent and Loewenthal: Influence of Radium Emanation on Purine Metabolism. *Zeit. Klin. Med.*, 1910, 71, 304.

Book Reviews.

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The little book gives to the intern an excellent view of some gynecological procedures. It is especially to be recommended to the novice to whom, at the beginning of his work in the hospital, everything is "unusual." It helps him to find himself and his place more quickly, particularly in hospitals where the house-officer is expected to absorb information and grow in knowledge without much instruction from his superiors. It is clear, compact and sound.

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ADEQUATE MEDICAL PREPAREDNESS.

No plan of national preparedness is at all complete without provisions for adequate medical service. The European war has clearly demonstrated the important part the medical unit plays in military campaigns. In the few wars in which this country has engaged, probably the most glaring defect was the inadequacy of its medical services. Many of the preventable casualties can be placed at the door of this condition. The notion that, at least in regard to the medical needs, they could be supplied on demand, fully prepared to take up this work, is now everywhere admitted to be erroneous. Not even the highest amount of medical skill qualifies one of itself to do duty efficiently as a military medical officer. Without special military training, the medical man is little better than useless, except in purely technical work away from the field. In time of action the ca-

capacity of the fighting forces is influenced largely by the number of the disabled who are rendered fit to return to the field in the shortest possible time or who, despite their disability, can be converted to other military needs; but more especially the ability of the medical branch to prevent the spread of epidemic and to control disease among the forces concentrated in the field or barrack. The general maintenance of the health of the military forces is of the highest importance, and much more than the comparatively minor individual medical work done. But any successful sanitary work calls for organization and coöperation of the highest order. In this regard the problems presented in military life are entirely new—and probably as new to the medical man as to the layman. The medical man must have the proper special military training if he is to be of more value than the layman.

Moreover, it must be remembered that the casualties in the ranks of the medical man are as large as those of other officers, and probably as large in proportion as those of the enlisted man. The medical man who enters the military organization during active service must be prepared to make the same sacrifices and undergo the same hardships as the rest of the forces.

In the *Military Surgeon* of February, 1917, Captain Mahlon Ashford outlines "The Most Practical Plan for the Organization, Training and Utilization of the Medical Officers of the Medical Reserve Corps of the United States Army and Navy and of the Medical Officers of the Officers' Reserve Corps of the United States Army, in Peace and War." This article deserves careful consideration as the expression of an experienced medical officer, who is conversant with the needs of the medical services. Captain Ashford first calls attention to the necessity of enlisting the coöperation of the medical public to the need of medical preparedness through the medical press, the lay press, through lectures and through affiliations. The special medical talent of the civilian must be ascertained so that it can be fitted into the proper place when needed, with the least possible delay or confusion. That every medical man must be embraced in such a plan can be seen from the size of the medical army needed in war time. Seven medical officers to every thousand men is not large. It is estimated that, in an army of five million men, about thirty-five thousand medical officers would be required.

The technical medical work must needs be always left to the civilian expert, so that the regular military medical officer can be utilized for organization, training and administration.

In a permanent plan of this kind, it is contemplated to keep these ranks filled with trained men by beginning this training with the medical matriculant during his undergraduate courses, this special training being given by army, navy or reserve officers, designated through the departments. The medical school training will be as preparation for commissions in the reserve corps. Acceptance therein will, then, be without further examination, except for the physical. After the completion of the undergraduate work, supplementary training in military medicine, in preparation for higher reserve commissions, is to be carried out through a four-year correspondence course, with periodic field manoeuvres and examinations. Also, there is provision for postgraduate courses in advanced sanitary tactics.

Finally, no matter what plan of organization or utilization of the medical resources of the country is decided upon, it is necessary to have a comprehensive policy of preparedness so that an efficient and adequate medical body can be developed for use in emergency.

RENEWED ACTIVITY IN THE CANCER CAMPAIGN.

THE American Society for the Control of Cancer has issued to all state medical associations a letter, stating that it was the unanimous opinion at the last meeting of the National Council that the professional organizations, particularly the state medical societies, should take the lead in a campaign for promoting familiarity with the most recent information about cancer and its treatment. The following suggestions for definite measures were made:

1. The American Society for the Control of Cancer renews its recommendation that your state medical association appoint a standing committee on cancer, if such action has not already been taken.

2. In order to obtain the best results, we believe that such committee should be continued in office for a term of at least three to five years. The conspicuous usefulness of the Cancer Commission of the Pennsylvania State Medical Society has, doubtless, been in large part due to

the fact that there have been few or no changes in its membership and no changes in its chairmanship since its original appointment in 1909.

3. The chief function of such committees being the cancer education of the physician, we suggest that they follow the example of the Pennsylvania committee, in constantly stimulating up-to-date consideration of the cancer problem within professional circles. The cancer committee should, therefore, seek to promote addresses and symposia at state, district, and county society meetings, and should arrange for the publication of the best obtainable papers in the state journal, and the distribution of reprints and other approved literature among practitioners, including, especially, those who are not members of county societies.

4. The council directs me in particular to bring to your attention the report of our committee on "Free Tumor Diagnosis as a Function of State Public Health Laboratories." A copy of this report is being sent to you under other cover, and your attention is respectfully directed to the recommendations of the committee, on page ten. This report has been endorsed by the National Council, with an earnest recommendation that state medical societies take any action which seems to them appropriate, in obtaining the extension of public facilities for tumor diagnosis within their jurisdiction, both as a means of assisting the physician to a prompt and certain determination of doubtful cases, and at the same time of giving the patient the benefit of earlier and more promising treatment.

5. It is believed that the organized medical profession, through the agency of the state and county societies and special cancer committees, should also seek to promote the special instruction of nurses, social workers, and others coming in direct contact with patients, especially women, the object being that in no case should the nurse attempt to make a diagnosis, but that in all cases of suspicious symptoms, she should be prepared to advise immediate professional consultation, and follow up the matter with force and discretion until such result is obtained.

The report referred to in Article 4 of the foregoing, entitled "Free Tumor Diagnosis as a Function of State Public Health Laboratories," was written by Leverett Dale Bristol and published in the *Journal of the American Medical Association*, May 27, 1916. The report is based on a survey of the various states in regard to the existing facilities for the laboratory examination of specimens of suspected cancerous tissue. After a study of the workings of the already established laboratories and a consideration of the arguments against the general establishment of free diagnosis of tumor tissue in state laboratories, the author concludes with the recommendations that: 1. So far as consistent

with local conditions, facilities should be offered under public auspices in each state for the diagnosis of tissue suspected of being cancerous. 2. The logical place for the doing of such work is the laboratory of the state health department. It is not to be supposed that such work will be given the preference over other work now being done by these laboratories. 3. To cover this work, in those states which have no such facilities, additional money should be appropriated. 4. Judgment must always be used by surgeons in the removal of suspected cancerous tissue for diagnosis, and the value of a microscopic diagnosis should appear to outweigh the risk involved before such a procedure is adopted.

The Massachusetts Medical Society, as has been previously noted in the *JOURNAL*, has already taken steps in accordance with those urged by the council.

Following investigation for some months past by a special committee, the society has recently approved the report and re-appointed the personnel of that committee as its permanent committee on cancer, as follows: Dr. Edward Reynolds, chairman, Dr. J. Collins Warren, Dr. R. B. Greenough, Dr. J. T. Bottomley, Dr. Edward P. Richardson.

The committee submitted a definite program of activities for the cancer education of practitioners in Massachusetts, which was adopted by the approval of the following recommendations:

1. That each of the district medical societies should, for the immediate future, devote one of its meetings each year to the subject of the control of cancer, the cancer committee of the state society offering to furnish speakers for such meetings if so desired.

2. That the cancer committee be authorized to distribute to the profession in Massachusetts, at the expense of the state medical society, but under the direction of its committee on membership and finance, such educational literature as it may deem wise.

3. That the cancer committee be directed to use all proper efforts toward securing state-wide opportunities for the free laboratory diagnosis of pathological tissue, as is already being done, with excellent results, in some other states.

4. That the cancer committee urge upon the *BOSTON MEDICAL AND SURGICAL JOURNAL* the expediency of constant publication of such a brief outline of modern principles in the diagnosis and treatment of cancer as may meet its approval.

INTENSIVE DIAGNOSTIC METHODS.

THE older diagnosticians were much admired for their ability to make such rapid and such accurate diagnoses by inspection, possibly even from the feel of the pulse—as is said of the Chinese physicians—or even from a narration of symptoms by the patient himself or by some other person for him—as is done by the modern correspondence quack. And while inspection or other superficial observations are important aids in diagnosis, their importance varies with the powers of observation of the examiner. In the early days of medicine the list of recognized diseases were few and the number of refinements in diagnosis were still fewer. But in the development of scientific medicine, of preventive medicine, the lay realization of the factor of good health and physical development in general and individual efficiency has created a place for more refinements in diagnosis. The demand by the public for diagnosis before the onset of grave symptoms has been much fostered by the Life Extension Institutes. Their endeavors are being carried to all classes and to all walks of life. They are undoubtedly playing a great part in the prolongation of life. The disease conditions they have been able to find before the presence of any subjective symptoms have done much to discredit apparently superficial and non-scientific methods of diagnosis. To the old diagnostician came only those with terminal symptoms. At present intelligent society fills the physician's consulting room during the incipient or latent stages of disease. Society now demands all the scientific aids to diagnosis and will not be prone to accept the naked opinion of the physician. The physician's brains and hands are no longer his only tools in trade. It is quite certain that in early but yet diagnosable stages of disease there are few if any outward manifestations, and not very often even in well-developed conditions. When there are such manifestations they are the result of the invasion of all the tissues of the body during disorganization or degeneration, the result of grave organic disturbances. Under these circumstances, however, diagnosis cannot help toward cure. Usually, cure is nearly all diagnosis.

No diagnosis is now made without the aid of all clinical and laboratory helps at the command of the clinician. The more ability and skill, the less likely is there to be a diagnosis without these aids. Often, it is true, these clinical aids

are only confirmatory of the physician's diagnostic sense, so to say, but yet without them there would be conviction without adequate proof.

As an example of the relative inefficiency of diagnosis from superficial observations—and no matter how keenly developed they are—is cited the inspection of immigrants. Necessarily, when immense numbers must be sifted through, inspection is the only workable plan. Under this method the certification even of 2.39% is remarkably large. When, during a drop in immigration, intensive examination of immigrants was carried out, the percentage of certifications rose to 9.37 (Annual Report, Public Health Service, 1915.) The diagnostician must be a keen observer, of course; but more than that, he must be one who knows what aids to call. He must be one who knows how to marshal all the facts thus obtained and to make therefrom the proper interpretation. And yet with all the newer aids diagnosis is still an uncertain quantity and very much a problem. In an investigation of statistics in some public hospitals in New York it was found that about less than half of the diagnoses made after long observation by the most competent of men were confirmed by autopsy. It is no arraignment of the profession but rather another evidence of the infancy of the profession and the profundity of the medical sciences.

THE VERGE OF WAR.

SINCE the official severance of diplomatic relations between the United States and Germany, on Feb. 3, a succession of international events has slowly, but steadily and almost inevitably widened the breach between these two countries. The final commission of the long-awaited overt act on the high seas was followed by the arming of American merchant and passenger ships; and this status of armed neutrality has been converted by a series of other events into a virtual though not yet declared state of war. There still remain persons of unquestioned patriotism who continue to hope and desire that the involvement of the United States in actual hostilities and bloodshed may yet be honorably avoided, but to the majority it appears as though the entrance of this country into war were now un-

avoidable. The Sixty-fifth Congress, which assembled upon the President's summons in special session on April 2, has the fate of the nation and the future of the world's history in its hands.

In recent numbers of the JOURNAL and in other columns of this issue have been noted the steps already taken in national and local preparation for impending events. In Massachusetts a part of the National Guard has already been mobilized for the protection of public works, and recruiting is in active progress for the military and naval forces of both the militia and the regulars. From the medical standpoint conditions of preparation may be regarded as already well advanced. Base hospitals have been organized, their staffs are in readiness and supplies prepared and in storage. Courses for the training of physicians in military medicine are in progress. The Massachusetts, Boston Metropolitan and other local branches of the American Red Cross have initiated a notable increase of activity in the making of supplies and in the training of civilians in first aid, home nursing, camp cooking and other branches of serviceable knowledge. The attention of members of the medical profession is particularly directed to the JOURNAL's column of war notes in which will appear weekly comment on details connected with the progress of preparation. It is our belief, not only that the American people with its intelligent alertness has effectively profited by the lessons both of preparation and of inefficiency demonstrated by European countries, but also that the medical profession of the United States will prove itself worthy not only in loyalty but in organization, capacity and skill, to undertake and successfully discharge the duties which will devolve upon it in the event of the entrance of the United States into war.

REGISTRATION OF PHYSICIANS.

SECTION 3 of Chapter 55 of the Acts of 1917 provides that "no person shall enter upon or continue in the practice of medicine within this Commonwealth until he shall have presented his certificate of registration, as a physician in this Commonwealth, to the city or town clerk of the city or town where he has or intends to have an office or his usual place of business and shall . . . pay a fee of twenty-five cents. And in a

like manner any physician residing in another—state and legally qualified to practise therein, whose general practice extends into the border cities or towns of this Commonwealth, and who is exempt from registration in this Commonwealth, under the provisions of section nine of chapter seventy-six of the Revised Laws, shall present his certificate of registration from the state in which he is registered to the city or town clerk of the border cities or towns in this Commonwealth to which his practice extends."

The law also provides that record by the city or town clerks shall be made upon blanks approved by the Board of Registration in Medicine, and a duplicate carbon copy shall be forwarded to the Board of Registration in Medicine.

For the benefit of the city and town clerks it may be stated that the Library Bureau, 43 Federal Street, Boston, is preparing blanks approved by the Board of Registration in Medicine which will be sold to city or town clerks, bound in groups of five, ten, twenty and fifty duplicate blanks.

These blanks will be on sale within a few days.

The law goes into effect April 10th.

WALTER P. BOWERS,

Secretary, Board of Registration in Medicine.

MEDICAL NOTES.

ST. LAWRENCE STATE HOSPITAL.—In the thirtieth annual report of the St. Lawrence State Hospital, Ogdensburg, N. Y. is an interesting note relating to the beneficial effect of the summer season on the recovery of its patients from their mental illnesses. The out-of-door life which the patients lead in the warm months of the year, the increased facilities for employment and recreation, all have a tendency to improve the mental and physical condition of the patients, and it is not surprising that improvement takes place in many who have perhaps been in a stationary condition. The records show that heretofore the largest number of recoveries in any quarter has occurred in the July-September period, between July 1 and September 30, and the smallest in the October-December period. During the year covered by the report 20 per cent. of the admissions, or 52 patients, were discharged recovered, and 37 others were sufficiently improved to justify their return to their homes and former occupations; in all 35.6 per cent. of the patients admitted

were subsequently returned to their homes distinctly benefited by treatment.

PNEUMONIA IN NEW YORK.—Early in March it was reported that pneumonia was abnormally prevalent in New York City. During the nine weeks ending on March 6 the disease caused 2377 deaths in that city, an increase of 534 over the corresponding period of 1916.

ENDOWMENT FOR SHANGHAI HOSPITAL.—The will of the late Adelaide E. Swift of Allston, Mass., contains a bequest of \$600 to endow a bed in the Margaret Williams Hospital at Shanghai, China.

AFTER-CARE OF INFANTILE PARALYSIS CASES IN NEW YORK CITY.—The New York Committee on After-Care of Infantile Paralysis Cases, organized in the early part of August, 1916, at the suggestion of Dr. Haven Emerson, Commissioner of Health, has issued a report of its work up to the present time. There were approximately 9,023 cases of poliomyelitis reported in New York during 1916. Of this number 2,308 died. By far the greater number of those living required after-care treatment. One of the first accomplishments of the organization was to standardize the treatment as far as possible. This was done by bringing about a great many meetings, consisting of physicians, nurses and the laity, which have resulted in the practical elimination of radical treatment. Through the united efforts of the committee, sufficient interest has been aroused leading to definite action on the part of the Public Health Committee of the New York Academy of Medicine in the promulgation of certain set standards for dispensaries, which will eventually be maintained by all recognized institutions interested in after-care work—such institutions to be inspected and graded under the auspices of the Associated Out-patient Clinics of the New York Academy of Medicine.

This Committee on Public Health—comprising L. Emmet Holt, M.D.; Virgil P. Gibney, M.D.; and Charles L. Dana, M.D.—defined the following standards of personnel and equipment which should properly be found in such dispensaries, and, on request of the After-Care Committee, the Associated Out-patient Clinics agreed to certify the existence or non-existence of these standards in any given dispensary.

The record of cases referred to and handled by this Committee up to March 1, 1917, is as follows:

Total number of cases referred to this committee, 7,354; cases referred to nursing agencies by this committee up to March 1, 1917, is as treatment under clinic supervision, 5,003; cases under care of private physicians, 1,073; cases discharged by clinic as needing no further treatment, 102; cases died since discharged from quarantine, 95.

WAR NOTES.

MEETING OF MEDICAL STUDENTS FOR NATIONAL DEFENSE.—A meeting attended by about five hundred medical students and internes of hospitals was held on Mar. 26, at the Harvard Medical School, in the interests of national defense. It was addressed by Dr. Charles W. Eliot and representatives of the army and navy medical corps and the public health service. Students from Harvard, Tufts and Boston University schools of medicine were present, and many signified their intention of enrolling themselves in the medical reserve corps or the public health service.

RED CROSS IN READINESS.—The first naval base hospital of the American Red Cross, stationed at Brooklyn, has received word to hold itself in readiness for active service. Its equipment, consisting of 250 beds, with surgical and medical supplies, is stored at the New York Navy Yard. In addition to the naval base hospital, there are six Red Cross army base hospitals in New York ready for Government service. Each has 500 beds, with a staff of twenty-five surgeons, fifty graduate nurses and twenty-five volunteer nurses.

HARJES-NORTON AMERICAN AMBULANCE CORPS.—It is announced that Robert W. Goelet of New York has made a gift of \$250,000 to the Harjes-Norton American Ambulance Corps, which will be used to organize two more sections of forty men each for operation behind the French lines.

AMERICAN UNITS IN GERMANY.—The American physicians' expedition, under the direction of Dr. Edward F. Nippert of Cincinnati, has returned to its base at Deutsch Eylau, where it will continue its work under the direction of the New York committee. The unit operating under the direction of the German-Austrian Aid Society of Chicago, has returned to Gradenz, in response to instructions from Chicago. It is reported that the German military authorities were very cordial in their insistence that the American units continue their work, and have given written assurance that they will be permitted to leave Germany whenever they desire. The unit at Maumburg has discontinued its work there and has donated its equipment to the municipality.

HARVARD MEN IN THE WAR.—The twenty-three members of the Harvard unit, who sailed from New York on February 22 for service in France, reached port safely, in due time.

The Harvard Memorial Society has compiled figures showing that 474 Harvard men have thus far taken an active part in the European war. These records include, besides men in the military, naval and aviation service, those who have engaged in the hospital and ambulance service

and in relief work of all kinds. The American Ambulance shows a list of 186 men; the Harvard Surgical Unit, 95; the British Army, 58; French Army, 17; Belgian Relief, 16; miscellaneous medical work, 15; and miscellaneous work of all kinds, 46.

PREPAREDNESS AT JOHNS HOPKINS MEDICAL SCHOOL.—Johns Hopkins Medical School has organized a base hospital unit with about three hundred members and students and alumni, and is being indexed as to the manner in which each can serve in event of war.

ROOSEVELT HOSPITAL RED CROSS UNIT.—The Roosevelt Hospital has organized a Red Cross base hospital unit of 500 beds. The unit is the gift of Clarence H. Mackay and his mother, Mrs. John W. Mackay, and will be prepared for service whenever called upon and wherever sent. Dr. Charles H. Peck will be the director of the unit, with Dr. James I. Russell as chief of the surgical service, and Dr. Rolfe Floyd chief of the medical service.

THE CARREL-DAKIN TREATMENT.—It is reported that the Rockefeller Institute for Medical Research has appropriated \$200,000 for the establishment of a hospital to be used for the instruction of surgeons in the Carrel-Dakin treatment of the wounded. It is expected that Dr. Alexis Carrel will be granted a leave of absence from France to come here and assume personal supervision of the work. One hundred beds will be provided. The hospital will be organized as a military unit, and will also serve the purpose of testing the feasibility of the plans for a portable hospital outlined by Dr. Charles Butler, who made a study of the subject under the French war department. Successive groups of army surgeons are to be assigned to the hospital to study the treatment.

PREPARATION FOR TREATMENT OF TUBERCULOUS SOLDIERS.—The Council of Defense has requested the National Association for the Study and Prevention of Tuberculosis to make a complete survey of the facilities for caring for soldiers, prisoners or interned civilians who may contract tuberculosis, and to take such precautionary measures as may save American troops from a disastrous spread of the disease. Dr. Herman H. Biggs, New York State Commissioner of Health, who is chairman of the committee carrying on the survey, has just returned from France, where, at the request of the French government, he has made a study of the conditions in the French army which have arisen as a result of the spread of tuberculosis.

MEDICAL OFFICERS' RESERVE CORPS.—At a meeting of the Auxiliary Medical Committee for National Defense, held recently in New York, plans were made for a recruiting cam-

paign to add 22,000 physicians to the Medical Officers' Reserve Corps. A resolution was adopted to appoint a committee of ten to study the plans in use in England and France, under which the practice of physicians who enter military or naval service is taken over in their absence by physicians who remain in civil life, and returned intact when the military and naval physicians are mustered out of service. Allowing ten surgeons for every 1000 men, a reserve corps of 25,000 men would provide for about 2,500,000 troops. The reserve corps now numbers 3000, and with the desired 22,000 recruits the desired strength would be attained.

TYPHUS PREVENTION ON THE MEXICAN BORDER.—To prevent the spread of typhus fever from Mexico into the United States, the Public Health Service has established six new quarantine stations in cities along the Mexican border. Stations at El Paso, Eagle Pass, Brownsville, Hidalgo and Rio Grande City are now in operation, and the plant at Lerado will be completed soon. Within the last month more than twelve thousand persons have been treated at El Paso and thousands of others have been treated at the other plants. Typhus fever has been epidemic in the plateau regions of Mexico for many years, without menace to the United States; but the disturbed political conditions in Mexico for the past five years has resulted in the constant migration of refugees, soldiers and their families, with the attendant misery and infection, so that stringent measures have become necessary in the border towns.

MOBILIZATION OF NEW HAMPSHIRE PHYSICIANS.—On March 26, thirty physicians from all parts of New Hampshire gathered together at Concord for an informal discussion of ways and means of military medical organization on the part of the New Hampshire profession. It was decided to appoint a committee of five physicians to represent the ten counties of the state, to organize a medical reserve corps. Another committee was appointed to investigate the advisability of the organization of a Red Cross unit, to cost about \$35,000.

GIFT TO THE AMERICAN AMBULANCE.—A gift of \$30,000 to the American ambulance field service has been announced. The gift is a memorial to the late Dr. Charles Goddard Weld of Boston, made by his mother, widow and daughter. It will be sufficient to provide twenty-two ambulances, repair cars, field kitchens, tents, etc., and will comprise an entire section of the service. Funds are being raised for the purchase of another Boston section of ambulances, which will be sent to France as soon as completed.

AUXILIARY MEDICAL COMMITTEE OF BOSTON. A committee to perfect an organization for an effective mobilization of the medical resources of the state, to aid in obtaining officers

for the regular army and naval medical corps, and to arrange suitable instruction in medical military preparedness, has been formed and is called the Auxiliary Medical Committee for National Defense.

Dr. R. P. Strong, professor of tropical medicine in the Harvard Medical School, has been chosen as permanent chairman of the committee, and Dr. John Warren as temporary secretary.

Among those on the committee are the following: Dr. E. H. Bradford, dean of Harvard Medical School; Dr. C. F. Painter, dean of Tufts Medical School; Prof. R. P. Strong, director of the School of Tropical Medicine of Harvard Medical School; Dr. E. H. Smith, dean of the Harvard Dental School; Dr. A. S. Begg, dean of the Harvard Graduate School of Medicine; Medical Director Leach, commanding officer of the Naval Hospital at Chelsea; Surgeon Leys, medical officer of the Boston Navy Yard; Col. Williams, surgeon-general, National Guard of Massachusetts; Dr. W. L. Burrage, secretary Massachusetts Medical Society; Dr. F. A. Washburn, superintendent Massachusetts General Hospital; Dr. John J. Dowling, superintendent Boston City Hospital; Prof. Harvey Cushing, chief surgeon, Peter Bent Brigham Hospital; Dr. C. A. Porter, Dr. F. B. Lund, Dr. Paul Thorndike, Dr. J. E. Goldthwait, Dr. J. B. Blake, Dr. R. B. Greenough, Dr. W. B. Cannon, Dr. Reid Hunt, Dr. R. I. Lee, Dr. Elisha Flagg, Dr. Lincoln Davis, Dr. John Warren.

BOSTON CHAPTER, AMERICAN RED CROSS.—The preparedness fund of \$50,000, which the Boston Metropolitan Chapter of the American Red Cross is attempting to raise, has reached \$18,581.

HEALTH IN THE GERMAN ARMY.—A German press notice gives the following account of the health of the troops in the German army during the second year of the war. It states that there is an improvement in the incidence of sickness, the rate for the first year of the war being 120 per thousand for a month, and the rate for the second year being 100 per thousand for a month. Typhus has decreased from 5.6% to 1.4%, diarrhea from 2.8 to 1.8, Asiatic cholera from .32 to .24, scarlet fever from .18 to .15, tuberculosis from 2.9 to 1.7, and nervous diseases from 24.3 to 21.5. Spotted fever, intermittent fever and diphtheria have increased, the first from .03 to .08, intermittent fever from .17 to .80, and diphtheria from .24 to .57. This incidence is also true of the civil population, and the diseases in their prevalence act in the nature of epidemics which have not yet run their courses. The germs of the infections are believed to have been brought from the South by the troops. Turning to the wounded, the report states that 70% return at once to the front, 6.4% are declared unfit for service, and the rest remain on garrison and other camp duties. Of the number of wounded sent to the military base hos-

pitals, 90% are rendered fit for service, either in the fighting lines or in the garrisons and camps, 1% die, while the rest, 9%, are mustered out of service. Since the beginning of the war a total number of 1250 have become blind.

A report through Berne via Paris states that smallpox is epidemic in Berlin, 135 cases, with 11 deaths, having been reported there and other cases in cities in the north of Germany. The authorities of Munich announce but four cases in that city. Soldiers returning from the eastern front are supposed to have brought the disease.

TYPHUS EPIDEMIC IN BELGIUM.—It is reported through Amsterdam that a typhus epidemic has broken out in Belgium. In the Province of Limburg, 80 deaths have occurred in a population of 4,000.

WAR RELIEF FUNDS.—On April 1 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$547,346.57
French Wounded Fund	210,579.71
Armenian Fund	166,263.61
Serbian Distress Fund	115,098.11
Permanent Blind Fund	105,560.10
French Orphanage Fund	89,956.55
Serbian Refugee Fund	79,177.00
Polish Fund	65,553.83
Boston Ambulance Fund	56,872.71
La Fayette Fund	25,332.03
French Phthisis Fund	13,492.04
Friends' Fund	10,321.77

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 24, 1917, the number of deaths reported was 265 against 234 for the same period last year, with a rate of 18.36 against 16.05 last year. There were 33 deaths under one year of age, against 34 last year, and 100 deaths over 60 years of age against 77 last year.

The number of cases of principal reportable diseases were: diphtheria, 72; scarlet fever, 45; measles, 177; whooping cough, 4; typhoid fever, 3; tuberculosis, 70.

Included in the above were the following cases of non-residents: diphtheria, 7; scarlet fever, 5; measles, 6; tuberculosis, 8.

Total deaths from these diseases were:

Diphtheria, 4; scarlet fever, 5; typhoid fever, 1; tuberculosis, 26.

Included in the above were the following deaths of non-residents: diphtheria, 1; scarlet fever, 1; tuberculosis, 2.

HOSPITAL BEQUESTS.—By the will of the late Rev. James Keegan of Woburn the Carney Hospital is the recipient of a bequest of \$1000.

By the will of the late Ellis Hollingsworth of Braintree, the Massachusetts General Hospital is to receive, upon the death of two beneficiaries, the sum of \$10,000.

MASSACHUSETTS ANTI-TUBERCULOSIS LEAGUE.—The third annual meeting and conference of the Massachusetts Anti-Tuberculosis League will be held on April 10, 1917, at 3 Joy Street, Boston. At the morning session the following papers will be read: "Tuberculosis in Dairy Cattle" by Curtis N. Hilliard of Simmons College; "The Danger to Children from Tuberculosis in Cattle" by Richard M. Smith, M.D., Boston; "The Importance of Proper Physical Development in Combating Tuberculosis" (illustrated) by Joel E. Goldthwait, M.D., Boston; and "Starting Health Habits in Childhood" by Miss Louisa P. Loring. At the afternoon session Dr. Donald B. Armstrong will speak on "Community Health and Tuberculosis Demonstration—Framingham: Dr. Eugene R. Kelley of the State Department of Health on "County Tuberculosis Hospitals—A Report of Progress;" Rev. Wm. B. Geoghegan of New Bedford and Dr. Arthur K. Stone of Boston, on "How Can Tuberculosis Hospitals be Made More Attractive?" and "What Becomes of the Discharged Consumptive?" by Miss Bernine W. Billings.

MONSON STATE HOSPITAL.—The trustees of the Monson State Hospital, Palmer, Mass., issue the annual report of that institution for the year ended November 30, 1916. The average number of patients cared for during the year past has been 1,003.37. A consulting staff has been appointed consisting of the following: consulting neurologist Dr. W. E. Paul; consulting physician, Dr. H. L. Smith; alternate consulting physician; Dr. M. I. Shea; consulting surgeon, Dr. W. R. Weiser, alternate consulting surgeon, Dr. J. M. Birnie; consulting physician on diseases of the skin, Dr. D. E. Harriman; Dr. A. H. Galvin, consulting orthopedic surgeon; Dr. G. A. Moore, consulting oculist and aurist. The photographing of the brain sections has been carried on this year as formerly. The full report of this work is in the hands of the state pathologist and a publication based upon the work done with this material is anticipated.

FORSYTH DENTAL INFIRMARY FOR CHILDREN.—The recently published second annual report of the Forsyth Dental Infirmary states that during the year 1916 a total of 29,186 cases were treated. It is the effort of the Infirmary to induce parents and school nurses to send the children to be treated at as early an age as possible, for the Infirmary had been in operation but a few months when it was evident that in spite of the large number of operations performed, the actual difficulty was not being remedied, that the cases did not reach the Infirmary until after the destruction of the six-year molars. This led to the plan of eliminating the older cases and making room for the younger ones of six or seven years of age. This plan at the present time is but partial, as the older children are admitted for simple fillings, but the effort is

being made to induce children from two to five years of age to come to the clinic for routine treatment.

NEW ENGLAND NOTES.

CONNECTICUT.—At the annual meeting of the Hospital Association of New London, the management committee reported that the institution was better and more thoroughly equipped than at any previous time.

The small-pox situation in Waterbury has brought discussion on the advisability of establishing an isolation hospital for such cases. The Chamber of Commerce has voted that a building for such purpose be purchased as soon as possible. It was noted that since the disease broke out last summer there have been 250 cases but none of them fatal. Of the total number that were stricken with the disease not over a dozen had ever been vaccinated.

At a meeting of the Norwich Medical Society on March 19, Dr. James J. Donohue made an address on the Compensation Act.

A fund of \$40,000, which was originally offered for the care of aged persons in Torrington, will be given to the Charlotte Hungerford Corporation for the care of patients suffering with tuberculosis.

NEW HAMPSHIRE.—Measles, which was suppressed last month after a run in the St. Francis Xavier Parochial School, Nashua, broke out this week in epidemic form at the O'Donnell School, the nearest public school to that institution. Over 60 cases were reported on March 18. Out of 200 cases in the city, only two have been fatal.

Whooping cough is prevalent at North Salem and Canobie Lake.

Physicians from all parts of New Hampshire met March 27 to discuss plans for medical preparedness. Dr. D. E. Sullivan, president of the State Medical Association, presided. The organization of a district physicians' unit of the Red Cross, at an estimated cost of \$35,000, was discussed and a committee appointed to investigate the advisability of this action.

Harvard Medical School.

REPORT OF DEAN, HARVARD MEDICAL SCHOOL.

The recently published report of the Dean of Harvard Medical School deserves special notice as it illustrates the aid which can be given by a medical school well equipped with laboratories and hospital clinics in the investigation of questions involving public welfare and health. During the year 1915-16, Professor Wolbach of the Department of Bacteriology, was requested by the State Board of Health of Montana to examine the nature of a prevalent disease called Rocky Mountain fever. Professor Wolbach has succeeded in demonstrating the cause and nature of the affection in a manner

which will lead to the future control of this disease. Professor Mallory, requested by the Mayor of Boston, offered the facilities of the laboratory of the City Hospital to conduct an investigation into the causation of scarlet fever, has already facts and suggestions of importance. The extensive epidemic of poliomyelitis led to the organization of a commission to work in conjunction with the State and City Boards of Health, and the results obtained have already justified its establishment. It has also been a significant demonstration of what can be accomplished in the way of public health work co-operation by the Department of Preventive Medicine and the value of such coöperative work to the students of the school for health officers.

The whole subject of food assimilation and food values has been zealously considered not only in the Departments of Biological Chemistry and Physiology, but also in the clinics and laboratories of the Peter Bent Brigham, Psychopathic, Children's, Infants' and Massachusetts General Hospitals. Investigations of great importance on nephritis and its complicating disturbances in the heart have been made during the past year by Dr. Christian and his colleagues and associates.

In compliance with the request to the School made by the Surgeon-General of the United States and of the Military Branch of the American Red Cross, hospital units have been organized by the Staffs of the Peter Bent Brigham and Massachusetts General and Boston City Hospitals. Money has been raised for the equipment of units, to be held in readiness in case of the need of medical military service. During the past year an ambulance corps was organized among the students and officers of the School who were drilled systematically in connection with the Harvard Regiment. The Harvard Medical Unit, serving at the request of the British Army Medical Department in the surgical charge of Hospital 22 of the British forces in France, has continued in the work undertaken two years ago. It is planned to continue the work with the help of volunteers among Harvard medical graduates. The surgical service is under the continuous direction of a representative of the Surgical Department of the Harvard Medical School.

Correspondence.

COMMITTEE ON ACCURACY OF CERTIFIED CAUSES OF DEATH.

Mr. Editor:—

New York, March 19, 1917.

The United States Public Health Service has recently issued a reprint of the conclusions of a Committee of the Section on Vital Statistics of the American Public Health Association, which the Public Health Service published in its weekly report of Sept. 22, 1916. These conclusions were presented to the Section on Vital Statistics at Cincinnati last October, and in view of the great importance of the subject, the Section voted to continue the Committee

and ask it to make a second report at the 1917 meeting, after submitting the first one to those best qualified to offer constructive, critical, and specific comments on its findings. A list of these contains your name, and you are urgently requested to give the subject all possible consideration.

In reporting its conclusions title by title, the Committee has used the terms "acceptable" and "not acceptable" to indicate its opinion for or against the unqualified acceptance of certificates of death under each title as reliable data upon which to base honest mortality statistics. When the conclusion is stated that a certain title is "unacceptable without autopsy" or without certain clinical or laboratory confirmation, the inference is not to be drawn that the committee wishes to eliminate the title; it merely wishes to suggest that the unsupported statement of death from this cause is unworthy of inclusion in reliable mortality statistics, but that such cause is a proper statement of death and may be included in credible statistics if certain specified data accompany the report of death.

It is desired to emphasize the statement that the changes recommended by the Committee, if adopted by the Section, will in no way affect the annual mortality reports of the Bureau of the Census to be published for the years prior to the next revision of the International List of Causes of Death, effective for the decennium beginning with 1920. It will affect them then only to the extent that the International Commission, charged with the revision of the International List, may rule, should it vote to approve recommendation for changing certain titles or sub-titles.

The Committee believes that the annual census statistics of causes of death, the quality of which has so greatly improved in recent years, should be supplemented (not supplanted) by the publication of tables showing the number of deaths *surely* assignable to each cause. Such tables will, necessarily, relate only to deaths in which there is no reasonable doubt that the fatal termination was caused by the condition reported. It has, therefore, considered each title-heading of the International List, and its conclusions, as published in Reprint No. 363, set forth its opinion as to.

1. What titles or headings of the list should be considered *in se* as "acceptable" statements of cause of death: these headings relate to conditions the diagnosis of which, in the opinion of the Committee, is reasonably certain, and confirmation of which, by laboratory findings or autopsy, is unnecessary.

2. What titles or headings should be considered "not acceptable" statements of cause of death, unless accompanied by specific supporting data, such as laboratory confirmation or autopsy. Returns of deaths reported as caused by conditions listed under titles which the Committee has classed as "not acceptable" should not be used in preparing tables showing the numbers of deaths *surely* assignable to that title, unless confirmed by specific supporting data.

3. What sub-headings or "terms" at present listed under the main titles are definite terms and true and adequate statements of the condition to which the title-heading relates: what ones are obsolete or insufficient, according to present-day standards.

4. Recommendations covering changes in names of titles, transfers of sub-headings or included terms from one title to another, and "elimination" of some of these sub-headings. The word "eliminate," as used in this connection during the deliberations of the Committee, registers its opinion of certain terms as inadequate, unscientific, obsolete, or unsuitable for one reason or another. The Committee advises against their use, but recognizes that many of them will be used by physicians for many years to come, and that when no additional data are obtainable, they must be classified for general mortality statistics under the title-headings which represent most probably what the physician intended when he used them.

It is believed that all members of the Section on

Vital Statistics and others who will be good enough to take time to study the inclusions here presented, in the light of the foregoing remarks, will find that an important advance towards the accuracy of the fundamental data upon which public health administration must be based, is herewith proposed.

Very truly yours,

H. EMERSON, M.D., *Chairman.*

AN ANECDOTE OF MEAD AND RADCLIFFE.

Boston, March 26, 1917.

Mr. Editor:—

Of all the famous English physicians of olden times Dr. Radcliffe was probably the most eccentric. Mead, his junior by many years, was just becoming known in London when the following incident occurred, which is related in "Physic and Physicians, A Medical Sketch Book," published in 1845.

"The pleasures of the table had great charms for Radcliffe, and Dr. Lettson has reported a curious relation on this subject as told him by the eccentric Dr. Mounsey."

"A little behind my house," says Dr. Cumming, "lies Carshalton, at which place, in days of yore, I have been informed that Dr. Radcliffe and the great Dons of his day held an hebdomadal meeting, sacred, not to Aesculapius, but to Bacchus."

To admit a young physician to these meetings was deemed a distinguished honor, for no one was asked unless he seemed likely to prove conspicuous. When Dr. Mead was young and just beginning to be talked of he was asked to Carshalton."

The meetings, we are told, proved most convivial, and finally Mead and Radcliffe were the only ones left. Radcliffe, feeling at peace with all the world, turned to Mead, saying, "Mead, will you succeed men?" "It is impossible," replied the polite Mead. "You are Alexander the Great, and no man can succeed Radcliffe. To succeed to one of his kingdoms, is the utmost of my ambitions." Radcliffe, susceptible to this flattery, replied, "I will recommend you to my patients." Radcliffe called on Mead the next day, and finding him deep in the study of Hippocrates, exclaimed, "Do you read Hippocrates in the original Greek?" "Yes," respectfully answered Mead.

"I never read it in my life," said the great Radcliffe. "No," replied Mead, "you have no occasion, you are Hippocrates himself." "This did the business for Mead, and it completely gained the great Radcliffe, and when he did not choose to attend patients he recommended Mead, who from that moment rapidly rose in his profession."

Yours truly,

WM. PEARCE COLES, M.D.

SOCIETY NOTICES.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS. —The annual meeting of the Massachusetts Society of Examining Physicians will be held April 4, 1917, at the Copley-Plaza hotel. Dinner at 6.30 P.M.; meeting at 8 P.M.

1. Pitfalls into which Insurance Examiners are apt to fall.

John S. Phelps, M.D.

Medical Director Columbian Ins. Co.

2. Failing cardiac compensation.

Charles H. Lawrence, M.D.

Brigham Hospital.

3. Following up cases of failing cardiac compensation.

Miss Ida Cannon.

Chief of Social Service, Mass. Gen. Hospital.

Discussion opened by Dr. William H. Robey, Jr., and Dr. Frederick T. Lord.

Election of officers, etc.

JAMES H. STEVENS, M.D., *Secretary.*

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Meeting for Medical Improvement at United States Hotel, Boston, Thursday, April 5, 1917, at 11.30 a. m.

Reader, George L. Tobey, Jr., M.D., of Boston, for Arthur J. Cole, M.D., of Holbrook.

Subject: "Acute Mastoiditis; Diagnosis and Treatment."

F. H. MERRIAM, M.D., *Secretary*,
South Braintree, Mass.

BOSTON CITY HOSPITAL ALUMNI ASSOCIATION.—The twenty-eighth annual meeting of the Boston City Hospital Alumni Association will be held at the Copley-Plaza Hotel on Wednesday, April 11, 1917, at 6.30 o'clock. Dinner will be served at 7 o'clock sharp, immediately after the business meeting. Dr. Elliott G. Brackett will preside. Communications from guests and members will be presented at the close of the dinner.

The price of the dinner will be two dollars for graduates of five years' standing or less, and three dollars for others. Small tables will be provided for members who desire to organize parties of eight, but notice must be given to the secretary at least one day in advance.

The Alumni are cordially invited to watch the operations at the Boston City Hospital, which will be performed in the morning, or to make ward visits with the different medical services. Also, beginning at 10.30 o'clock, the following papers will be offered by members of the staff in the Surgical Amphitheatre:—

"Types of Tubo-Ovarian Suppuration and Their Treatment." Dr. Robert M. Green.

"Infarction of the Lung." Dr. William H. Robey, Jr.

"Labyrinthine Tests in Space Sense Derangement." Dr. Edgar M. Holmes.

"Intra-ventricular Injections of Salvarsanized Serum in Case of Syphilis of the Central Nervous System." Dr. Edward H. Nichols.

"Report of a Case of Dermatitis Congelationis of the Third Degree Resulting from the Application of an Ice-bag." Dr. Townsend W. Thorndike.

"Nerve Regeneration after Suture." Dr. Isador H. Coriat.

The Trustees have invited the Alumni to luncheon in the Hospital Library at one o'clock. The entire hospital will be open for inspection all day.

It is hoped that every graduate will make an earnest effort to be present both at the Hospital exercises and the dinner in the evening.

CADIS PHIPPS, M.D., *Secretary*.

THE MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.—The next meeting will be held at the Massachusetts General Hospital on Tuesday, April 10, at 8 P.M.

Dr. Paul D. White will tell about RECENT DEVELOPMENTS IN THE STUDY OF DISEASES OF THE HEART.

Please be prompt and thus show your appreciation.

DOUGLAS GRAHAM, M.D., *President*.

MRS. MABEL F. WALKER, *Secretary*.

THE HARVEY SOCIETY.—The ninth lecture of the series will be given at the New York Academy of Medicine, 17 West Forty-Third Street, on Saturday evening, April 7, 1917, at 8.30 P.M., by Prof. W. H. Howell, Johns Hopkins University. Subject: "The Coagulation of the Blood."

MARRIAGES.

DR. CARL J. HART, of New Britain, Conn., was married on March 24 to Miss Emma Johnston, a graduate of the New Britain Training School for Nurses.

APPOINTMENT.

DR. PHILIP W. PLACE, of Boston, has been appointed resident physician at the *Contagious Department of the Cincinnati City Hospital*.

RECENT DEATHS.

DR. JOSEPH FRANCIS O'SHEA, City Physician of Lynn, died in that city, March 29, at the age of 54. He was a native of Ireland, coming to America when a boy, and getting his medical training in the University of the City of New York. He was graduated in 1886, and settled in Lynn, joining the Massachusetts Medical Society in that year. He was Assistant Medical Examiner and a member of the staff of the Lynn Hospital. His widow survives him.

DR. THOMAS BERNARD SHEA died at his home in Boston, March 25, of heart failure. He was 54 years old, a graduate of the Roxbury Latin School, of Holy Cross College and of Harvard Medical School in the class of 1887. Dr. Shea was quarantine officer at the Port of Boston 1888-1890, Medical Inspector of the Board of Health, 1890-1904 and Deputy Commissioner of Health in charge of the sanitary division from that time until his death. He was a Fellow of the Massachusetts Medical Society.

DR. SAMUEL J. BASSFORD, who died March 16, at the St. Barnabas Hospital, Portland, Me., after an operation, was born in Thomaston, Conn. He was graduated from Bowdoin Medical School in 1881. He practised medicine in Biddeford and Portland. He was prominent in the Cumberland Medical Association and also in the Practitioners' Club. He is survived by a daughter.

DR. DANIEL GOODENOW, who died on Wednesday, March 14, on the way from Florida to New York, was born in Lewiston, Me., Dec. 15, 1863. He was graduated from Dartmouth College in 1885, and from Dartmouth Medical School in 1889. He resided for about 20 years in Maynard, Mass., where he practised his profession. He is survived by his wife, one daughter, two sisters and two brothers.

DR. HALL STAPLES, who died March 7 at his home in West Acton, was born in Windham, Me., Dec. 3, 1870. He was educated in the public schools at Windham, was graduated from Brighton Academy in 1887 and spent one year at Bowdoin College. He was graduated from Dartmouth Medical School in 1892, and further pursued his studies at the New York Post Graduate Hospital. He was town physician in Acton for a number of years. He practised medicine in Grafton, Vt., Shirley and Waltham, going to Acton about nine years ago. Dr. Staples was a member of the Dartmouth Alumni Association, and Vermont and Massachusetts State Medical Societies. He is survived by his wife and a daughter, his mother and step-father.

DR. ALVAH A. WARREN, who died March 19 at his home in Central Falls, R. I., was born in that city 43 years ago. He was a graduate of the School of Pharmacy in Providence, and also of the Baltimore University Medical School. He was a member of the Rhode Island Medical Association. His widow, two sons, four brothers and a sister survive him.

DR. HERSCHEL N. WAITE, who died March 9, at his home in Johnson, Vt., from Bright's disease, was born in Stowe, Feb. 13, 1850. He was graduated in 1882 from the Eclectic Medical College in New York City. In 1882 he established in New York the Yorkville and Harlem Free Dispensary for the poorer classes and for clinical instruction for eclectic physicians. In 1885 he received the honorary degree of Doctor of Medicine from the Eclectic Medical College of Cincinnati, and later became the executive member of the University of Medicine and the American Medical College of Indianapolis, Ind., for the State of Vermont. At Montpelier, in 1895, he organized the New England Eclectic Medical Association. He is survived by one daughter and two sisters.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

April 12, 1917

ADDRESS		EDITORIALS	
SCHOLARSHIP IN MEDICINE. <i>By W. S. Thayer, M.D., Baltimore, Md.</i>	519	THE ACTUALITY OF WAR.....	543
ORIGINAL ARTICLES		A MEDICAL PROFESSION THAT IS STATISTICALLY STATIONARY.....	543
RENAL STONE. <i>By George Gilbert Smith, M.D., Boston.</i>	524	THE MODERN TENDENCY TOWARD WEAK-FOOT.....	544
ON DISEASE INCIDENCE IN CHINA. <i>By Carl A. Hedblom, M.D., Rochester, Minn.</i>	530	THERMOMETER DISINFECTION.....	544
LIPOMA OF THE INTESTINE. <i>By Anthony H. Harrigan, M.D., New York.</i>	535	REGISTRATION OF PHYSICIANS.....	545
A CONTRIBUTION TO VEGETATIVE NEUROLOGY: TOUCHING UPON HEART ACTION, SPINAL-LYMPHATICS, AND SO-CALLED VAGOTONIA AND SYMPATHICOTONIA. <i>By Edward J. Tracy, M.D., Boston.</i>	538	MEDICAL NOTES.....	545
THE CAUSE OF POLIOMYELITIS. <i>By Horace Greeley, M.D., Brooklyn, N. Y.</i>	540	OBITUARY	
NAIL PUNCTURE WOUNDS OF THE FOOT: RESULTS IN 100 CASES. <i>By Irving Clark, M.D., F.A.C.S., Worcester, Mass.</i>	541	THOMAS BERNARD SHEA, M.D.....	549
BOOK REVIEW		JOSEPH F. O'SHEA, M.D.....	549
Encyclopedia Medica. Edited by J. W. Ballantyne, M.D.....	542	WARREN WILBUR PILLSBURY, M.D.....	550
		CORRESPONDENCE	
		LETTER FROM CHAIRMAN OF MASSACHUSETTS HEALTH INSURANCE COMMITTEE TO PRESIDENT OF THE MASSACHUSETTS MEDICAL SOCIETY. <i>David L. Edwatt.</i>	551
		INFANTILE PARALYSIS IN 1917. <i>Richard B. Rand, M.D.</i>	552
		MISCELLANY	
		NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR.....	550
		NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.....	552

Address.

SCHOLARSHIP IN MEDICINE.*

By W. S. THAYER, M.D., BALTIMORE, MD.

WHEN Dr. Lewis asked me to speak to you to-day, he suggested as a title for my remarks, "Scholarship in Medicine," an alluring and fascinating subject for reflection for one to whom that most blessed privilege is afforded—the opportunity to reflect. From an experience of nearly thirty years, however, I should say with confidence that to none do the gods so consistently deny this privilege as to the physician. Indeed, all the progress of mankind seems to centre in one great conspiracy to search out the secret and silent chambers of the doctor's castle and therein to install a telephone. And the timid doctor has not, as a rule, the courage of one of your eminent instructors who, in the early days, when first this scourge of mankind invaded his laboratory, having endured its incessant tinkle as long as might have been expected of a just and tolerant man, arose with an air of determination and demolished the instrument of Satan.

And so, as I write these words, the hour approaches at which I have promised to speak to you, and the moments for reflection recede slowly and surely.

At a time when honors and awards for excellence in their school work are being given to

men who have shown promise, some of them, of becoming what we like to call scholars—at such a time, it is not unfitting to reflect on what we mean by a scholar, and what one means particularly by scholarship in medicine. The word "scholar" is, after all, one not altogether easy of accurate definition, one which has not wholly the same meaning to every man. For instance, the words "scholar" and "student" are essentially different in their significance. The great mechanician, for example, who by his imagination, insight and learning in his special branch, has changed the course of human life, is not necessarily a scholar. He may be an eminent student, but if his attention has been limited to one field, if his all-absorbing work has shut him out—as with such men it so often does—from association with fellow students in other branches of science and art and history and literature—that man is not what one would call a scholar. The words "scholar" and "scholarship" bring to us, I think, the idea of a certain catholicity of knowledge, of a certain breadth of interest and association that the brilliant student whose life is given entirely to a single branch of learning, often fails to attain.

One of the most important attributes of the man that we are fond of calling a scholar, is that active, alert interest in all that surrounds him, which leads him, despite himself, into sympathy and association with men in every sphere of human activity. I remember hearing it said of a certain distinguished diplomatist that he was a dull dinner companion until some word was dropped by a neighbor which told of something that was new to him. In a minute the whole at-

* Address delivered before the students of the Harvard Medical School on the occasion of the award of the John Harvard Scholarships on Feb. 26, 1917.

titude of the man would change; he would become alert, animated, full of suggestive questions, interested in every word that fell from the lips of his companion. The sympathies and interests of such a man soon give him a store of general information, an acquaintance and association with fellow students, a power to drop for a minute the studies to which his special energies may be directed and to follow another lead with real intelligence and profit—an attitude which is indicative of that special mental superiority which we associate with the scholar. Such rare men—for the real scholar is a rare man—are not led from the pursuit of their main object of study by these surrounding interests. Rather does the breadth of their sympathies mature and sharpen their judgment, while the increasing refinement of the man's character, the resources which his associations and learning have brought him, give him a great advantage over his fellows in his relations with the rest of mankind.

The foundation for such scholarship is generally laid in what we have been pleased to call a "liberal education," the common basis for which in this country has been the degree of Bachelor of Arts. The attempt on the part of the university used to be to give the student who attained that degree an elementary education in the classics, history, philosophy, mathematics and later some of the sciences—a basis on which, according to the paths which he might follow in his later life, he might build the necessary superstructure.

A hundred years ago the foundations which led to a degree of bachelor of arts were relatively simple, for our knowledge of the natural sciences was still in its infancy. There was time in the four years' academic course, which was then often finished before the boy was twenty, to give him a sufficient knowledge of the ancient languages, of philosophy and history and mathematics—of the "humanities" as they were called—to make it possible for him in later years to take up the trail and follow in whatever direction it might lead; and at the same time, through his knowledge of Latin, still the universal language of the scholar and the student, to follow the progress of science, of the arts and of literature in foreign lands.

But conditions have changed considerably. Our knowledge of the natural sciences has developed with enormous strides. Latin is no more the exclusive language of the scholar. Thousands of students in special branches of literature and art and science are contributing important researches in their own tongue. To this mass of literature no one language is a key. No man who aims to attain to anything deserving the name of scholarship, indeed, no man who wishes to excel in any one particular branch of science, can safely neglect the study of at least three modern languages—English, French and German.

At the same time, by the individual who wishes

properly to fit himself for the study and practice of medicine, more and more time must be given to the fundamental study of the natural sciences, chemistry, physics, and biology in its broadest sense; and the course of studies that he must pursue both before and after his entrance into that which is, strictly speaking, a school of medicine, is ever lengthening.

And thus a very old and frequently recurring suggestion is again being discussed,—the suggestion that the man who intends to prepare himself for the study of medicine should devote himself almost purely to the study of the natural sciences, and should save the time which is believed by some to be wasted in the study, in particular, of the ancient languages. Again, various plans have been adopted in this and in other universities which tend to shorten the course of studies which lead to the degree of bachelor of arts, and to include in the work which is counted upon as leading to this degree, some of the studies pursued in the school of medicine. Much has been written of the wasted years of college life, and much has been said of the time which is lost in the preparation of a student for practice.

It is, I think, certainly true that there are some very paradoxical conditions associated with our college education. There is no reason why it should not be possible for an intelligent student, with a proper preliminary education, to accomplish the studies which bring to him the degree of bachelor of arts by the time he is nineteen or twenty years of age. Most boys if sent to good English, French or German preliminary schools could do this easily and without the least drain on their physical condition. There are serious defects in the management especially of our secondary schools.

If the day ever arrives when the teaching in our secondary schools is conducted by men who are, for a considerable part, scholars, as is the case in the better European schools, this truth will, I think, become clearly evident. A large part of this instruction up to the present day, has been given by young men teaching up to the limits of their knowledge, in the hope of attaining a competence sufficient to allow them to abandon the field of pedagogy for something that to them is more profitable. Such men teach the classics as if they were dead languages. Indeed to them Latin and Greek are dead languages. It is useless to try to teach a dead language. Such men are not likely to inspire the youth with a great love of knowledge. One trouble with our secondary education is that the opportunities in our country are still so great that the career of a teacher, with its small salary and its restricted opportunities, does not appeal to the ablest men. Our boys are not so well taught as are English and French boys, and they waste several useful years in the secondary schools.

Another rather unfortunate condition exists

in many of our universities. The old four years' academic course, leading to a degree of bachelor of arts, has become one of the dearest of American traditions. The traditions that are associated with this course were founded upon conditions existing over a hundred years ago, at a time when the students were on an average, several years younger than they are today, and when the general supervision of the college was much more strict and much more that of our larger secondary schools. But the conditions of life in the academic department of the university have changed greatly. With the development of the elective system, the students were thrown much more on their own responsibility with regard to their studies, while gradually the freedom of life has approached almost that of the European university, so much so that parents dread to send their sons practically out into the world at the age at which they might perfectly well be fitted to enter college. Most boys, if they had proper educational advantages, could finish a half of what they now do in college before the time when, in the natural course of events, they enter today; and so, in many instances, now, they are held back. With the happy arrangements that have been introduced at Harvard in connection with the work of the freshman year, it should become possible to send a boy to the academic department considerably earlier than one might otherwise have felt it prudent.

But still there remains the grave question as to how to bring it about that the boy with whom time seriously counts, may attain the academic degree to which his work entitles him, at the age at which he might perfectly well accomplish it, without sending him to college at fifteen or sixteen. It is a serious question, but one which we cannot discuss further at this time.

How do these conditions affect the man who seeks to be a scholarly physician? The attributes which we recognize as those of the scholar are the same whatever be the main interests of their possessor, whether he be lawyer or physician or historian or philologist. It must, of course, be acknowledged that the seeds of scholarship lie mainly, not in what a man is taught, but in what a man is. I think of one physician who may rightly be called a scholar, whose early education in the classics, for instance, was limited. His sympathies, however, have led him into such constant communion with the great minds of the past that to read his words one would hardly fancy that he had not conversed with the old masters in their own tongue. But such men are unusual, and I feel very earnestly that the surest basis for true scholarship lies in a good elementary education,—an education which demands a study of the classics and of mathematics at least as extensive as that which used to be required in most of our universities fifty years ago. A large part of this, as I have said before, could be acquired perfectly

well before the boy enters the college proper; and under the conditions which exist today this should be made possible.

I know that there are many who disagree with me, but I have been greatly interested as the years have gone by, to see how strongly some of my colleagues, who have devoted themselves to the natural sciences, have come to realize the importance of an old-fashioned basis in the humanities for the man who wishes to take a really scholarly view of his subject. As I said a moment ago, I cannot imagine a man expecting to attain eminence, certainly not scholarly eminence in medicine, without an easy reading knowledge of French and German. He ought to have more; he ought to have a speaking knowledge. There is nothing that will make the acquisition of such knowledge easier than a fundamental basis of Greek and Latin. To him who has been well trained in Latin and French, a reading knowledge of the other Latin languages—Italian, Spanish, Portuguese and Roumanian—comes of itself, if the need be.

A good fundamental training in mathematics is absolutely necessary to him who must be familiar with modern physical and chemical methods. So far as the question of time alone is concerned, there is no reason why a student who leaves the academic department of a university at the age of twenty-one should not have, besides a sufficient biological, chemical and physical training, a good basis in the humanities.

"But still," some will say, "although the study of Latin may be of advantage in acquiring French or Italian, those languages can perfectly well be learned without it. Is the study of Latin and Greek not waste of time for a boy who might, by giving them up, save two years of his life?" It all depends on what one calls a waste of time. One might, perhaps, call it a waste of time if his chauffeur should seek to study Greek and Latin as a preparation for his career. A chauffeur may acquire considerable mechanical skill in a very short period of time by the study of machinery and by working his engines. If he be a clever fellow, he may go further. But if his aim be to become a chauffeur, and if he must make his living as soon as possible, he cannot afford the time for much schooling. Yes, if one aims to be a chauffeur alone that argument is, I think, good. If the individual who starts to study medicine, aims simply and solely to attain proficiency in one particular branch of the art of medicine, it may certainly be possible for him to do good work without the knowledge of Latin and Greek. But I do feel very strongly that the man who, from the beginning, seeks to follow only those paths which may lead most quickly to the practice of the branch which he has selected, or which he fancies he is going to follow, is deliberately building about himself a wall which may well hem him into a narrow path for life, and

shut out from him opportunities for which in after years he may long.

There are relatively few students who, in the medical school, are able to tell just what their future career is to be. How many men who are convinced that their future lies in surgery, find themselves, ten years later, in an entirely different branch of work? I fancied that my career was to be that of a surgeon. For nearly three years I never once doubted it; and then events happened which entirely changed my course. If I had devoted myself purely and simply to a preparation for the life of a surgeon, those opportunities would not have come to me. How much less common is it for the student who enters the academic course, to know with certainty the path which he is to follow; and when it is a matter of a boy of thirteen or fourteen in a secondary school it would be a rash father, it seems to me, who would deliberately plan to limit the boy's training to one special course of work.

The man who has to cover so much ground as he who desires to pursue the study of medicine from the point of view of a scholar can hardly expect to find himself prepared to enter a school of medicine, as they are now constituted, before his twenty-first year. By this time, with proper schooling, he ought to be able to cover the necessary ground in ancient and modern languages, mathematics and natural sciences. But he cannot do it if he prepare in the ordinary secondary school along with the other boys of his age. That is the grave difficulty. We should have secondary schools in which boys who have passed their college examinations at 15 and 16, may still pursue a year or two of work in the humanities or natural sciences—work which will all be valuable to them in their after-career. The difficulty for the boy who is to study medicine lies in his pre-academic years—in the years of his secondary schooling, years in which he is too often held back.

I am, then, one of those who believe earnestly that a broad, general training, not only in the natural sciences, but in ancient, as well as in modern languages, and in mathematics, is important for him who is to study medicine if he desire to be a broad-minded and scholarly man.

And now a word or two as to the course of the student in the school of medicine. In a letter written to me à propos of this very talk, the writer referred to the discouragement felt by some students owing to the extremely crowded and dull character of the curriculum. I think I understand that to which he referred, although I cannot understand how anybody could refer to a medical curriculum as dull. When I was a student, although I was discouraged enough, heaven knows, time and again, there were few dull moments in the course.

But, it may well be asked, how can a man with scholarly tastes be happy in a course so crowded as is our four years' curriculum, and what can

one do to make life more endurable for him? It is undoubtedly true that our American medical course is extremely crowded. The main reason for this is our graded class system, which has always seemed to me fundamentally and radically wrong. As I have said elsewhere, I feel very strongly that by the time a man is ready to enter a school of medicine he should be of an age and a degree of development at which it should be possible for him to select and follow his courses as he will, and to present himself on his record for examination and for acceptance for his degree when he is ready, and not before. A graded class system is a makeshift rendered necessary in schools because of the number of the students and the variation in their habits and natural abilities. With children a class system is necessary unless the individual is led by a private tutor. In our academic departments the class system also still remains and is probably desirable. But when a man enters a school of medicine he should be as free as he is in a European university, under certain general guidance and limits, to pursue his studies as deliberately and thoroughly as he may choose. I feel strongly that while a limit should be set as to the rapidity with which a student should go through his course in medicine, we ought not to apply methods designed for school boys to serious-minded men. There are many men in a school of medicine who, by spending one or two years more at their work than do their fellows, may emerge far maturer and better physicians than their more brilliant colleagues who go through our present course as easily and without effort or strain. I hope I may live to see the day when American universities may not only afford such opportunities to students of medicine, but may also encourage their migration from one institution to another; when it may be possible for the keen and discriminating man to accomplish his studies in those laboratories and clinics which most appeal to him, no matter if his course lead him from Boston to San Francisco and back again. It is well to remember that in America we are trying to make a class do together in a given period of time, work which, in other countries, many of the best students accomplish more deliberately, according to their own abilities.

But at the present moment we have, unfortunately, I think, a graded class system, and each man has to follow it alongside of his fellows; and, furthermore, the work that this entails takes almost all of his time. No one can go through this or any other good American school in four years and do all his work as he would like to do it. Under these conditions it is, I think, important that the student do not attempt to specialize too early. You need most of what you are obliged to pass through in the high school system that is now ours, and as I said a moment ago, you cannot tell, no matter how sure you may feel today, where you are going to bring up.

And then, another bit of advice which may seem rather paradoxical.

I am never tired of emphasizing the difference between the modern and the older methods of instruction in medicine. In the older days much of that which we were taught was a matter of authority. Propositions that we were assured were truths were fed to us. Today our effort is more to teach you methods by which you may control and prove the assertions which are made by others. Our desire is rather to make you doubt the propounded statement unless a satisfactory proof is advanced, or unless you can confirm it by your own methods of control. And this should stimulate a love for inquiry and investigation which should tend to make of you the student that the true physician must remain throughout his life. If you are the right sort of a man, you are going to find yourself during the course of your studies, interested in many questions which may lead you into independent investigation. But how hard it is to find the time for such work in the midst of a prescribed four years' course! And when I say that one of the most valuable forms of training for the student of medicine is a certain amount of original work done under proper direction during his course, you may find the advice in direct contradiction to what I have said before. One of the discouragements that you will meet, it is true, is that you will have so little time for such work. But some investigation tucked in during the year or during the summer vacation can only do you good. There are occasions when the student who can afford it, pursuing his medical studies under the system which I hope will be ours some day, might well interrupt his work for six months or a year, or even more, to pursue some specially promising research. I can easily fancy that by the advice of an instructor, some students might wisely do this under our present system. This much I would say: do not let anyone discourage you from the desire to investigate; grasp every opportunity for research, though they may be few, during your school course. Do not, however, fancy that because you are interested in some promising field of investigation you can properly neglect your other work, and expect to receive due credit for it. I have had some amusing experiences of this sort in which brilliant men, who might well and profitably have given up a year of their medical course to a problem of research, have felt injured because the faculty would not grant them credit for routine work which they had entirely neglected.

I have referred several times to the necessity of a knowledge of modern languages. If you have not now an easy reading knowledge of French and German, acquire it. You will need it every day of your life, and you will never regret its acquisition. Go to a Berlin school; learn to talk and not simply to read the language. Buy books on the technical subjects in

which you are interested and read them. If you are not able to go to foreign countries, seek opportunities to hear plays in foreign languages or go to churches where you can hear sermons preached in a different tongue. A little sustained effort will give you a reading knowledge before very long, and that is really most necessary.

And then when you have finished the course in the medical school seek, so far as you can, to make the acquaintance of men and methods in other parts of your own country and in other countries. It is as profitable for a man to "go to Europe" today as it used to be fifty years ago. A period of time spent in a foreign city, sufficient to give one an insight into the language and habits and ways of the people, and especially to give one an acquaintance and association with one's colleagues in a foreign country, is of great value.

Go to large medical meetings in this or in other countries whenever you have the opportunity. Men will often speak to you slightlying of the value of such gatherings. They will tell you that nothing important is done there, that the social functions quite overwhelm any serious work, that they are a pure waste of time. Do not believe them. There is no more valuable experience than that of making the acquaintance of the student whose communications you may have to read. Such experiences often modify greatly our estimate of the importance and worth of the man and his publications.

It is always interesting and surprising to the good student to find in his own country, first, how much there is that he can learn from the methods and practice of colleagues who live but a few hundred miles away, and secondly, how much he himself can bring to them. Osler's advice to all his students used to be to become peripatetic doctors, and it is not bad advice.

Every student who can—after he has finished the year's service in a hospital, which all ought to seek—should endeavor to spend a year of study at some school other than that with which he has been familiar as a student or house physician. He should seek an opportunity, either in Europe or in this country, to put himself under the direction of some good man associated with active university work or with an institute for medical research, and if possible undertake a piece of original work. Such a year cannot fail to be of great value to him. It may lead him directly into the special branch of study to which in after life he is to give his main attention. It will certainly expand his horizon considerably. And what is sometimes hard for the modest student to realize—if he has done good work in the school, in a hospital and then in a new clinic or laboratory, his name and his attainments will soon become reasonably well known in American medical circles. Someone said several years ago,—I think it was one of your own

professors—: "How surprised the students would be if they realized how important a part they occupy in the conversation of their teachers."

It is a trite observation, that it is well for the professional man to cultivate outside recreative interests. Such interests come naturally to one with a scholarly mind. It may be the love of music or literature or art that leads the student of medicine into side paths of study or rest or dreams. I know a professor in a large university who, in his summer vacation some years ago, uninstructed and unadvised, took up the brush, and today is painting landscapes of real beauty and merit; this man has found not only a recreation but an occupation which, throughout his life, will push backward the limits of age. It may be the collection of monuments of antiquity, of old books or letters, than which nothing is more fascinating. Many of us have a deeply implanted love for that which is old. Indeed, he who can pick up an old book or enter an old house or listen to the music of an old opera without seeing charming visions with his mind's eye, is deeply to be pitied. Who can listen to an opera of the Second Empire, let us say, without seeing the crowded galleries, the dresses and figures and faces of those days, the flowers in the hair, the waxed moustache, the crinolines, the brilliant uniforms, the twinkling lights on the boulevards without? Who can turn the leaves of his incunabula without dreaming of the old eyes that have gazed on these pages, of the old fingers that have turned them and inscribed their fading annotations on the margins? Who can read the old letters without fancying himself in the midst of the quaint or stirring scenes evoked by the yellow lines; and in free hours, when the mind and body demand rest and relaxation, what can take us farther away from care and anxiety than dreams such as these?

A distinguished German professor, in the period of his sanity, has advised that every scientific man might do well at the height of his career to change his calling and enter upon new paths of activity,—a radical suggestion and one possible only to the scholar of catholic interests. But there are events in the lives of many men which make such a change necessary, and he who, in the days of activity and success, has cultivated broad outside interests as a recreation, may find in these very interests in the hour of illness or misfortune or necessity, the means of his re-creation.

With these few thoughts which have come to my mind between telephonic tinklings, I must close, for as one of the wisest of Boston doctors* has said, "It is a Trespass on the *Rules of Prudence* never to know *when to have done*. Wherefore, *I have done!*"

* Rev. Cotton Mather: Directions for a Candidate of the Ministry, etc., 12th Boston, 1726.

Original Articles.

RENAL STONE.*

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RENAL stone is a subject upon which much has been written, particularly from the clinical and operative points of view. There still seem to be gaps in our knowledge of the natural history of calculus formation; of the best way to treat certain types of stone-ridden kidneys, and of methods, operative and dietary, looking to the prevention of recurrent stone. Upon these aspects of the question I feel sure the last word has not been said. This paper is an endeavor to present some of the less thoroughly understood phases of renal stone.

The formation of renal stone is an interesting problem. Many writers hold that a nucleus of organic material, such as bacteria, desquamated cells or pus, is necessary to start the process of precipitation. Others believe that crystals deposited from a supersaturated urine become bound together by colloid material, which may be albumin or may be the colloid coloring matter of the urine. (W. G. Smith.¹) Cabot and Crabtree's statistics² show that in 12 cases of nephrectomy for stone, calculus formed in the remaining kidney but once, whereas in 66 cases in which the stone was removed by pyelotomy or nephrotomy, there were recurrences in the operative kidney in 32. This fact, they consider, suggests that "there is some condition in the kidney itself which influences the formation of stone and which does not exist to the same extent in the opposite kidney." Undoubtedly this is true, as a kidney traumatized by calculus and by the operation for removal thereof provides pockets in which urine is retained and contains organic nuclei all ready for the deposition of salts, *provided the urine contains those salts in an easily precipitable state.*

Admitting that a diseased kidney invites stone formation, I would nevertheless draw a different conclusion from Cabot and Crabtree's figures. The fact that stone recurs in 1 of 12 nephrectomized patients, and occurs in only 1 of 100,000 ordinary people, points to a factor in stone formation which affects both kidneys.

The number of cases of bilateral stone in a series looked up by me, 5 out of 34, is strongly suggestive of a condition common to both kidneys as the underlying cause of calculus formation.

Shattuck (quoted by H. G. Wells³), from a study of uric acid stones, found that organic nuclei were extremely rare; that the center almost always consisted of a primary crystalline deposit. Henry (quoted by Kahn⁴) found that 158 of 187 calculi had uric acid nuclei: Utz-

* Read at the Surgical Fortnightly Society, Dec. 12, 1916.

mann (also quoted by Kahn⁴) found that in 545 stones, 80.9% had uric acid nuclei; 5.6% had nuclei of calcium oxalate. It is stated by W. G. Smith¹ that crystals of uric acid formed in the urine (in the presence of colloid pigment) differ from those formed artificially.

Whether crystals alone may be the nucleus, or whether they require a colloid to bind them together, is not of practical importance. Colloids sufficient for this purpose occur in normal urine (coloring matter). It is an established fact that stone will form in a kidney which shows no sign of past or present infection. If organic matter is needed, it can be obtained in the absence of inflammatory processes. Such processes, however, in conjunction with a urine favorable to the formation of calculi, render more likely the recurrence of stone (cf. Cabot and Crabtree.)

This phase of the subject should not be passed without mention of the theory that an important factor in the formation of stone is retention of urine within the kidney pelvis. Fowler⁵ of Denver ascribes the formation of stone to stasis of the urinary stream within the pelvis, and says that in every case he examined, some obstruction could be demonstrated by pyelography. As a remedy he proposed the suspension of the kidney in a position parallel with the 12th rib, thus aiding renal drainage by gravity. There is not time to take up the arguments against this theory; unquestionably if stasis exists, it does assist in calculus formation. The formation of stone in kidneys which are not poorly drained, and particularly in both kidneys of the same individual, is frequent enough to upset the claim that renal retention is a necessary factor in calculus formation. The fact that Fowler's suggestions have not been adopted by genito-urinary surgeons is significant of their value.

Evidence cited above seems to show the frequency of uric acid as a nucleus. Beyond that point the part played by this substance is very small. Uric acid, either as such or as the urate of calcium, is rarely the chief constituent of renal stone (Kahn⁴). In a series of 34 analyses or renal and ureteral stones made by Denis, in the chemical laboratory at the Massachusetts General Hospital, only one stone was composed chiefly of urates. MacKarell, Moore and Thomas (quoted by W. G. Smith¹) found that of 24 stones, only 2 were pure urates. In the majority of stones examined by them, uric acid was present and formed from 2 to 10% of each stone.

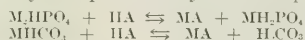
If stones be classified according to their chief constituent, the oxalate stones are the most frequent (Wells). In our series of 34, 16 were composed chiefly of this substance. Oxalic acid in the urine is derived to a certain extent from food ingested. It is found in particularly large amounts in such foods as rhubarb, spinach, strawberries, figs, tomatoes, plums (Schildecker⁶).

Calcium oxalate, the form in which oxalic acid occurs in the urine, is kept in solution best in acid urine, although it may be precipitated in urine of any reaction. It is the least soluble (Smith, W. G.) of the salts which commonly form stone.

Although the belief is held by some that oxalate calculi can be distinguished by their gross appearance, this is not so. The presence of blood pigments may disguise the true color of any stone, and the determination of its composition must be left to the chemist.

The substance next in frequency as the chief constituent of stone is phosphate, combined with calcium, magnesium or ammonium. Calcium phosphate is the most usual salt, but frequently it is mixed with the others. Typical phosphate stones are yellowish-white, soft, friable, and grow rapidly. As will be shown later, the large majority of recurrent stones are formed of this substance. It is important to consider the elimination of phosphates, in order to determine methods of decreasing their percentage in the urine.

Phosphoric acid, from which the phosphates are formed, is derived chiefly from foods, and to a much slighter degree from the metabolism of nucleo-proteins. In the organism, it is neither oxidized nor reduced (Smith) but plays a most important part in preserving the blood reaction. The factors concerned in maintaining this equilibrium are carbonic acid, bicarbonate of soda, monosodium-phosphate and di-sodium-phosphate. To quote Forbes and Keith⁷, "The processes concerned may be represented by the two equations:



M stands for any basic radical; A for any acid radical.

The indications are that in the fluids of the body the carbonic acid is present as carbonic acid (H_2CO_3) or sodium bicarbonate (NaHCO_3), and all of the phosphoric acid as monosodium phosphate (acid sodium phosphate) or di-sodium-phosphate. Now, mixtures of these compounds in solution possess greater power than any other known salts for balancing each other, and any acid or base that may be added, so that the solution always remains neutral." (page 178.)

The sodium which in the blood is combined with the phosphates is to some extent replaced in the kidneys by calcium or magnesium or ammonium, and is thereby spared from excretion, and is returned to the blood to offset the constant tendency of the body fluids to become acid through the formation of acids by metabolism. The calcium, magnesium and ammonium phosphates which are excreted in the urine are the salts from which phosphatic stones are made; in insolubility, calcium phosphate (the commonest salt) stands next to calcium oxalate. The phosphates of the alkali metals (sodium, potassium, etc.) are soluble, hence do not appear in

stones. A high degree of acidity of the urine tends to hold calcium phosphate in solution, but on the other hand, as acidity is obtained chiefly through the medium of acid phosphate, the greater solubility of the phosphates is offset by their increased concentration. Phosphoric acid in food is absorbed chiefly in the upper intestine.

Uric acid occurs in the urine as the acid itself, or as one of its salts, i. e., calcium urate, sodium urate, ammonium urate. Although it occurs to a slight degree in nearly all stones, it is rarely the chief constituent (Kahn). In our series of 34, it was the chief constituent once, and was present in traces three times. There seems considerable evidence pointing to the importance of uric acid as the nucleus of renal stones (see above). Wells makes the statement that uric acid probably furnishes the nucleus for most stones, and is thrown down in highly acid urines.

Uric acid is derived partly from endogenous sources—metabolism of nucleins—which cannot be greatly influenced. (Schildecker). The exogenous sources, however, can be diminished by the omission of certain foods from the diet. These will be discussed later.

Calculi of calcium carbonate are supposedly rather unusual in man, although common in herbivorous animals. In our series of 34 cases, in two calcium carbonate was the chief constituent, combined once with a trace of phosphate, once with a trace of oxalate. These stones are more soluble than calcium phosphates, less soluble than calcium urate. They form only in alkaline urine.

The more unusual stones are composed of cystin, xanthin and very rarely of albuminous bodies (Miyauchi⁷).

Kretschmer⁸ found 107 cases of cystin stones reported since the discovery of cystinuria by Wollaston in 1810. He added two cases of his own (both vesical). Apparently cystinuria is due to faulty metabolism of albuminous products, and is caused by a hereditary condition of the liver.

In summarizing the chemistry of renal stone, it appears that the great majority form upon nuclei of uric acid; that other salts are then deposited, most frequently calcium oxalate, next frequently, the phosphates. Unusual stones are pure urate, calcium carbonate, cystin and xanthin.

Occurrence: Apparently renal stone occurs about equally in men and women (Cabot and Crabtree). The most frequent time of stone formation is between the ages of 15 and 35 (ditto.)

The occurrence of stone among people of certain districts has long been noted. Thus in England stone occurs in certain Eastern counties as frequently as 1—63,000, whereas in Northwestern counties the incidence is 1—210,000. (Smith.¹) Such a marked difference as this

would seem to be due to a difference either in diet or in water ingested. The inorganic matter found in water consists chiefly of calcium carbonate, calcium sulphate and calcium chloride (Harrington, page 330). None of these is a frequent important constituent of renal stone, and the only possible connection between the ingestion of "hard" water and the formation of stone would be through the larger amount of calcium taken into the system.

Pathology: The effect of stone upon the kidney in which it lies depends largely upon mechanical relations. A stone which is of the proper shape or size to obstruct the outflow of urine will cause damage through hydronephrosis, which quickly becomes pyonephrosis. The other method of producing damage is through infection and ulceration. In such cases we do not know whether the infection antedated the stone, and perhaps was a factor in its beginning, or whether it fastened upon the kidney as a result of trauma caused by the calculus. It is certainly true that the majority of renal stones are accompanied by infection at the time of their discovery. Aseptic stone, however, does occur not infrequently.

The amount of damage to the kidney by calculus depends upon (1) obstruction; (2) infection. If due to the former, there is no hope of recovery of function, unless the obstruction is acute and of only a few days' duration. If due to infection, the removal of the stone and drainage of the kidney may in a measure restore the functional ability of the organ.

The position of the stone in the kidney is highly important. If in the pelvis, the entire kidney will be affected equally; if in a calyx, that cavity is likely to be dilated and the parenchyma surrounding it thinned, at times so much so that only the kidney capsule bounds the pocket of stones. The remainder of the kidney in such cases is usually unaffected.

The amount of damage which actually occurs is suggested by figures from the paper by Cabot and Crabtree on Recurrence of Renal Stone. Of 66 cases of renal stone, nephrectomy had been done in 12. From the number of cases of nephrotomy or pyelotomy in which recurrence took place, it is possible that nephrectomy should have been done in more.

The symptoms of renal stone vary as greatly as the pathology, and in fact are dependent thereon. Pain is of two types: (1) the dull lumbar ache caused by stretching of the renal capsule from urinary retention in the kidney or from the swelling or inflammation; (2) the sharp, colicky pain, usually accompanied by nausea, which is radiated along the ureter to the bladder, and even into the scrotum or labia. The latter is due to unusual activity of the smooth muscle of the pelvis and ureter, aroused by its effort to dislodge a stone (Squier¹⁰), and is analogous to the "cramp" caused by violent intestinal peristalsis. In obscure cases, fist per-

cussion in the costovertebral angle is of value in eliciting pain. In a not inconsiderable proportion of cases, however, pain is entirely absent. Two cases come to my mind.

A young man in excellent health had been turned down by an insurance company because of albumin and a small amount of pus in his urine. He had never had a pain referable to the genito-urinary tract. X-ray showed a calculus the size of a marble in his left kidney. At operation, a very sharp stone was removed from an upper calyx.

A woman of 32 came to the genito-urinary clinic because of persistent hematuria, duration three weeks. She had not had a pain or ache of any kind. X-ray showed in the right kidney region a large branching calculus, the outline of which so closely resembled that of an injected pelvis that I thought the plates must have been mixed. Operation showed a kidney almost completely destroyed, apparently by a very chronic obstruction to the outflow of the urine. There was no infection whatever.

In the majority of cases of renal stone, pain of one type or the other is or has been present. Morris (quoted by Keyes, *Diseases of Genito-Urinary Organs*, 1911, p. 417) in 103 cases, found pain present in 71 cases (69%).

The occurrence of pain referred to the healthy side—the so-called “reno-renal reflex”—is doubted by Keyes. Cases have been reported by as good observers as Krotoszyner¹¹ and Fowler¹². At any rate, the pain of renal stone is, as Cabot says, “a highly misleading symptom.” Nor can the urinary findings be entirely relied upon. In 150 cases of renal and ureteral stone, Cabot¹³ found the urine negative at more than one examination in 6 cases of renal stone, and 15 of ureteral stone. Morris (see above) found pyuria in only 48% of his 103 cases of renal stone. Blood, although frequently present, is absent in a number of cases (Keyes) and is present in so many other renal conditions that it is not of great value. A positive x-ray is, of course, the best proof of renal stone. Even that is far from infallible. Considering both renal and ureteral stone, Cabot found the x-ray at fault in 6%, and believes that 15% of errors would be nearer the truth. The belief that pure uric acid stones do not show is substantiated by Newman¹⁴, but these stones are very rare and even a small amount of earthy salts such as calcium phosphate makes them visible. Geraghty and Hinman¹⁵ found that in a series of 67 ureteral stones, 22.4% were missed by the x-ray. Those missed were calcium phosphate and carbonate and not uric acid.

Even a so-called positive x-ray may be at fault. Krotoszyner¹¹ reports a case which showed a shadow in the region of the kidney accompanied by renal colic. At operation, a calcified tuberculous lymph gland was found, and no stone in the kidney.

We find, therefore, that in the diagnosis of renal stone it is unwise to depend upon any one

bit of evidence, unless that evidence is supported by other positive findings. The situation is well summarized by Cabot¹³ as follows:

1. In all cases of abdominal pain of chronic or recurring type, in cases of backache, lumbar or sacro-iliac joint strain and lumbago, careful repeated urinary examinations, including sediment, even if albumin is absent, and catheter specimen from female, are essential before diagnosis is made.

2. X-ray alone is insufficient evidence of renal stone.

3. In cases suggesting renal stone with negative urine, negative x-ray and free ureter, a wax tip catheter will usually give the diagnosis unless the stone lies in a dilated calyx.

Prognosis: Without operation renal stone will surely destroy the kidney in which it lies. This process may be so slow that it will in no way prevent the individual from reaching the three score years and ten of Biblical fame, or it may bring about, through an accident of obstruction or infection, one of the acute crises of surgery.

Even if the stone is removed, by operation, recurrence is likely to take place. Cabot and Crabtree found that of 63 cases of nephrotomy or pyelotomy, stone recurred in 34, and of 21 cases of ureterolithotomy, in 6.

The tendency to recurrence seems to me to be the chief problem in the surgery of renal calculus; measures to prevent this most disheartening occurrence must be both *operative* and *post-operative*.

Treatment of Renal Stone: In mapping out the treatment of renal stone, the surgeon should have as a foundation for his decision certain data in regard to the patient. The age and general physical condition must first be considered; in relation to these, the influence of the kidney condition upon the patient. The absorption of toxins from an infected kidney may render necessary an operation which in other respects would be inadvisable. The signs of renal insufficiency, particularly those pertaining to the gastro-intestinal tract, must be borne in mind. Anorexia, flatulence, nausea and vomiting may be indications either of reflex nervous disturbance or of uremia. The total renal function, best estimated by the phenolsulphone-phthalein test, should be determined, as well as the specific gravity, the albumin and the sugar content of the urine. The function of the separate kidneys should be known.

Good x-rays of the entire urinary tract are essential. In most instances it is hardly necessary to determine the exact position of the stone in the kidney. This may be done by x-ray with a visible catheter in the ureter, or by pyelography, but my feeling is that in the majority of cases, the additional knowledge gained is not worth the discomfort and expense to the patient. Whether the stone can be removed by pyelotomy, or whether nephrotomy will be nec-

essary, can be determined after the delivery of the kidney.

The question of the advisability of nephrectomy, on the other hand, had better be settled, at least tentatively, before operation. If the other kidney is normal, as evidenced by a negative urine, negative x-ray, and a good function, a markedly decreased function upon the stone side should always suggest nephrectomy. This may sound radical, but I believe that it is much better, particularly among working people, to remove a seriously damaged kidney at the first operation, than to leave an infected organ which, in at least 50% of the cases, is sure to form stones, and which has at best only slight value as an excretory organ. The question is a delicate one, to be decided by each operator when the kidney is in his hand. But in order to decide wisely, he must know those facts to which reference has been made.

If he decides against nephrectomy, pyelotomy is the best route for removal of the stone. If the stone is partly in the pelvis and partly in a calyx, and so fixed that it cannot be delivered by pyelotomy, the renal tissue overlying it may be incised by a lateral incision, extending upwards from the pelvic border. If the stone is in a dilated calyx whose wall is much thinned, the incision may be made through the thinned out cortex. In such cases I have tried to obliterate the cavity by infolding the wall, but I have no evidence as to the success or failure of this manoeuvre. If the stone is so large that it can be removed only by splitting the kidney from end to end, nephrectomy will probably be better than nephrotomy. If the kidney tissue is relatively thick, the chances of post-operative hemorrhage will be about 1 in 2; if it is much thinned, the organ is useless.

For incising the renal parenchyma, a liver needle and silver wire have proved very satisfactory.

A few stone kidneys should be drained after removal of the stone. If a considerable hemorrhage seems likely, it is well to provide a vent for the blood instead of sewing up all avenues of escape except the ureter. If there is much sepsis, drainage will relieve this more rapidly than no drainage. Folded rubber tissue passed through a small hole in the cortex into the pelvis, or directly into the pelvis, does not leave a sinus lined by necrotic tissue as does a rubber tube.

With a view to the prevention of recurrence, the following points in operative technic should be observed: (1) A pyonephrotic kidney with insufficient ureteral drainage should be removed.

(2) Poorly drained pockets in kidneys should be obliterated, resected or provided with drainage. Encrusted or septic kidneys should be drained.

If the disease is bilateral, it may well be that operation is contraindicated. I have seen sev-

eral individuals with large bilateral calculi which gave very few symptoms, but which had reduced the renal function to so great an extent that operation seemed a risky procedure, which, even if successful, would not materially lengthen life. In less advanced cases, operation is certainly indicated. Authorities agree that the better kidney should be operated first. In deciding which side should be attacked first, the surgeon must consider the separate function, must decide in which kidney the stone will do more injury, and determine, if possible, in which kidney pyelotomy will suffice, and in which nephrotomy will be necessary. (Zondek¹⁶.)

In certain individuals, especially those with bilateral stone, the likelihood of recurrence makes the prognosis very poor. One cannot have his kidney opened every year or two, and yet if rapidly growing stones are left alone, the kidney will be destroyed. Such a case was George A., an otherwise healthy young Albanian. In June, 1914, I removed a stone from the lower end of his right ureter. At that time x-ray showed a faint shadow in the course of the left ureter, but a catheter had passed freely to renal pelvis. He developed a stricture of the right ureter just above the bladder, and in December, 1914, I transplanted the right ureter into the bladder. At that time x-rays of the urinary tract were negative save for a faint shadow below left ischium, thought to be a phlebolith. October, 1916, he became very ill, with high fever and great tenderness in the left flank. X-ray showed a small stone in lower calyx of the left kidney, a larger stone impacted in upper third of left ureter, and three small stones in lower end of left ureter.

I operated upon him again, delivering a large, swollen kidney, from which I removed a small stone. The stone in the upper ureter was removed and the kidney drained by a tube through the cortex. Three weeks later his fistula had closed, and he again ran a temperature. I removed the three stones from the lower ureter. Since then, he has been very well. The stones were calcium, magnesium and ammonium phosphate.

A case such as this—we have had several at the Massachusetts General Hospital—offers little encouragement unless something can be done to prevent the recurrence of the calculi.

Too often the patient is dismissed with the admonition to drink "plenty of water" and is not seen again until another stone has formed. After operation, the condition of the urinary tract should be carefully studied. If the urine contains pus or bacteria, their source should be determined, and vigorous measures should be instituted to the end that the condition causing them may be cleaned up. This will usually be found to be a pyelitis, and must be treated first by the administration of hexamethylenamin in large doses—40 to 80 grains a day—accompanied by sodium acid phosphate unless the

urine is strongly acid. If this does not suffice, the pelvis of the kidney should be washed with silver nitrate, one per cent.

I have now under observation a case of post-operative pyelitis in whom one pelvic lavage was followed by most marked improvement in the urine.

In looking up the records of the 34 cases in which analyses of the stones were recorded, it appeared that 5 out of the 34 were bilateral. In 3 of these 5, the disease was recurrent as well. There were no recurrent unilateral stones. In 3 of the five cases, the stones were practically pure phosphate stones. In the other two, the stones were composed fairly equally of phosphates and oxalates. Of 16 cases with calcium oxalate stones, none was recurrent. It would seem, therefore, that the phosphatic stones are the ones to be dreaded, and that if dietetic measures will be of any help, they should be tried.

It goes without saying that the urine should be kept very dilute by the ingestion of much water. In addition to this, the ingestion and absorption of phosphates must be diminished. If the intake of calcium is also diminished, phosphates will be excreted as salts of sodium and potassium, which are soluble.

Lehmann and Strauss (Forbes and Keith⁷) found that the ingestion of the alkaline earth carbonates, such as chalk, increases the percentage of phosphates excreted through the intestine. With this Zuelzer agrees, and Von Noorden and Dapper have adopted the method. Herxheimer found that calcium carbonate baked in bread to constitute 5% of same, caused marked decrease of output of phosphates in the urine.

To prevent the recurrence of phosphatic stone, therefore, one should drink freely of water, take a teaspoonful of calcium carbonate with or after meals, and avoid eggs, milk and fish, and fruits.

If the stones are oxalate, Schildecker⁶ advises keeping the urine highly acid. Carbohydrates, which by their fermentation increase the formation and absorption of oxalic acid, should be eaten sparingly. Avoid foods of high oxalic acid content, such as rhubarb, spinach, strawberries, figs, potatoes, tomatoes, and plums.

To prevent uric acid deposition, avoid highly acid urine. Eat chiefly of vegetables, fats and carbohydrates. Eat a low protein diet of purin free nature. Avoid asparagus, liver, sweetbread, kidneys, meat extracts, and malt liquors, claret etc.

Cystinuria: Klemperer and Jacobi (Schildecker) cleaned up a case by giving sodium bicarbonate 0.6 gr. per day.

In the case of mixed stones, in which the phosphates play a part, dietary treatment should be directed towards a diminution of phosphates in the urine. Our experience seems to point with a good deal of certainty to the phosphates as the cause of recurrent stone.

As evidence of the practical value of this

treatment for phosphatic stone I should like to insert here the summary of a personal communication from E. L. Young, Jr. He has had under his care two women with persistent stone formation, accompanied by phosphatic incrustation of the bladder. One of these had had stones removed by cystotomy, but more had formed before the wound had healed. Both had been treated by the administration of sodium acid phosphate to make the urine acid and by the instillation into the bladder of cultures of *Bacillus Bulgaricus* and of *Bacillus Acidophilus*, but without marked relief.

Sodium benzoate was substituted for the acid phosphate, calcium lactate in powder form was given and the "antiphosphate" diet was adopted. In one case in which the amount of phosphate in the urine had been studied, the daily output fell from 6 grams per day to 1.2 grams. In two weeks the patient was entirely free from symptoms for the first time in two and a half years, and has remained so ever since (seven months). She has been continuing the diet and bi-weekly instillations of *Bacillus Bulgaricus*.

The other case has shown a similar improvement, but it has not been checked up by laboratory analyses.

It is the duty of the surgeon, therefore, to supplement by after-treatment and by diet his operative measures employed against renal stone. Every calculus should be analyzed, for it is only through dietary treatment that certain cases of "malignant" stone formation can be offered hope of a permanent cure.

REFERENCES.

- ¹ Smith, W. G.: Trans. Royal Acad. of Med., of Ireland. 1915, xxxiii, pp. 68-93.
- ² Cabot and Crabtree: Trans. Amer. Assn. G.-U. Surgeons. 1915, x, pp. 169-182.
- ³ Wells, H. G.: Chemical Pathology. Ed., 1914, pp. 414-419.
- ⁴ Kahn: Zeitschr. f. Exp. Path. u. Therap. 1914, xvii, pp. 88-97.
- ⁵ Fowler, O. S.: Trans. Amer. Urological Assn. 1913, vii, pp. 25-35.
- ⁶ Schildecker, C. B.: Amer. Jour. of Obst. 1914, lxx, pp. 979-993.
- ⁷ Forbes and Keith: Phosphorus Compounds in Animal Metabolism. Ohio Agricultural Experiment Station, Technical Series. Bulletin No. 5.
- ⁸ Miyachi: Centralblatt f. Allgemeine Pathologie u. Path. Anat. 1915, xxvi, pp. 289-293.
- ⁹ Kretschmer, H.: Urologic and Cutaneous Review. 1916, xx, pp. 1-10.
- ¹⁰ Squier, J. B.: Trans. Amer. Gynec. Soc. 1915, xl, pp. 273-282.
- ¹¹ Kroetzner: California State Jour. of Med. 1915, xiii, pp. 312-315.
- ¹² Fowler, H. A.: Trans. Amer. Assn. G.-U. Surgeons. 1915, x, 144-161.
- ¹³ Cabot, H.: Trans. Amer. Assn. G.-U. Surgeons. 1915, x, pp. 258-264.
- ¹⁴ Newman: Brit. Med. Jour.: 1915, ii, p. 692.
- ¹⁵ Geraghty and Hinman: Surg., Gynec. and Obstet. 1915, xx, pp. 515-522.
- ¹⁶ Zomlek: Gesellschaft f. Chirurgie. 1914, xliii, pp. 422-431.

LONDON DEATH RATES IN JANUARY.—During the month of January, 1917, the total death rate of London was 18.4 per thousand inhabitants living. Among the several districts and boroughs the highest rate was 25 in Holbein, a crowded central slum, and the lowest was 14.5 in the financial and business quarter of the city.

ON DISEASE INCIDENCE IN CHINA.

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DISEASE incidence among an ancient isolated people who constitute a quarter of the world's population should in itself be of much interest from a medical standpoint. With the impending industrial and commercial development of the country it becomes a matter of increasing importance to the outside world. Yet it is a subject concerning which there is only the most meager and fragmentary data. Jeffries and Maxwell,¹ in "The Diseases of China," the only comprehensive publication of the subject, state: "Certainly what we have to present is incomplete, and we would make it plain that this is so, and that this chapter is, as it were, but a preliminary presentation of a study which the future must bring to completion." There is, broadly speaking, no medical profession in China, and there are no vital statistics. Practically the only source of first-hand information in regard to disease incidence is from the small handful of western trained medical men working in a few widely scattered, inadequately equipped and understaffed mission institutions.

In the 1914 year book of the missions of China we find that the staff of European physicians of 264 hospitals and dispensaries totalled 300 European men, 135 women and 112 nurses. The Chinese staff consisted of 94 physicians and a group of assistants and nurses of varied and uncertain attainments. During the year 1914, 126,788 in-patients and 2,129,774 out-patients were treated.

Annual reports are available from about 60 of these institutions. Twenty-seven of these include detailed statements concerning the patients treated. Only eight of the reports give a complete list of medical and surgical cases. Successive reports, however, are available from four of the institutions.

As this article is concerned chiefly with the variety and relative frequency of disease conditions, these successive reports will be included. The fourteen annual reports studied deal with 15,800 in-patients, gleaned largely from among 298,436 out-patients in the hospitals, which, with few exceptions, are located in the coast provinces. While the data is obviously too fragmentary to furnish a basis for any conclusions either as to incidence or geographical distribution it, nevertheless, represents the combined experience of some of the foremost medical institutions in China, and thus contributes towards the knowledge of disease incidence as met with in patients in Chinese hospitals.

There are almost as many nomenclatures and classifications of disease as there are reports. There is also a tendency to group diseases under such terms as "various," "others," "miscellaneous," "sundries," etc. A summary of lists of diseases which include such vagaries obviously cannot be accurate. However, as the number of cases so listed is limited, the percentage of error is also small.

Because of the diversity of classification, the cases had necessarily to be grouped. I have classified them under large general headings, and under these they are grouped according to the international classification of disease. The following list (Table I) gives in actual numbers and percentages the disease incidence under the large general headings.

TABLE I.

	1913-1914* CHINESE HOSPITALS		1913-1914 MASS. GENERAL HOSPITAL	
	CASES	PER CENT.	CASES	PER CENT.
1. Specific infectious diseases and general diseases ...	2,781	17.60	2,120	13.36
2. Diseases due to animal parasites	2,053	13.00	96	0.60
3. Diseases due to metabolism	4		131	0.82
4. Diseases peculiar to infancy	11		105	0.66
5. Diseases due to physical agents	167	1.05	86	0.54
6. Poisonous and intoxications	146	.92	104	0.65
7. Malignant—carcinoma and sarcoma	210	1.32	1,020	6.42
8. Benign	308	1.95	462	2.91
9. Congenital malformations	92	0.60	171	1.08
10. General injuries and diseases of skin and subcutaneous tissues	2,754	17.43	654	4.12
11. Special skin diseases	162	1.03	338	2.13
12. Diseases of circulatory system	139	.90	901	5.77
13. Diseases of the lymphatic system	280	1.77	59	.37
14. Diseases of the blood	272	1.73	130	.82
15. Diseases of the ductless glands	54	.35	155	.98
16. Diseases of the nervous system	333	2.10	732	4.62
17. Diseases of bones, joints, tendons and fasciae	974	6.16	1,288	8.12
18. Diseases of the eye	1,524	9.66		
19. Diseases of the ear	129	.82	106	.67
20. Diseases of the naso-pharynx	26	.16	264	1.66
21. Diseases of mouth, lips, pharynx, tonsils, palate	112	.73	350	2.20
22. Diseases of the jaws, teeth and gums	105	.66	76	.48
23. Diseases of the tongue	1		11	.06
24. Diseases of the esophagus	6		53	.33
25. Diseases of the stomach	207	1.33	388	2.45
26. Diseases of the intestines	213	1.35	523	3.26

* Approximately.

TABLE I—Continued.

	1913-1914*		1913-1914	
	CHINESE HOSPITALS	MASS. GENERAL HOSPITAL	CASES	PER CENT.
	CASES	PER CENT.	CASES	PER CENT.
27. Diseases of the liver and gall bladder	85	.55	443	2.79
28. Diseases of the pancreas	1		14	.08
29. Diseases of the abdomen and peritoneum	203	1.30	824	5.19
30. Diseases of the rectum and anus	575	3.65	298	1.86
31. Diseases of the larynx	1		21	.13
32. Diseases of the trachea and bronchi	172	1.10	111	.70
33. Diseases of the lungs	50	.33	208	1.31
34. Diseases of the pleura and mediastinum	40	.25	183	1.15
35. Diseases of the kidneys and ureters	142	.90	552	3.47
36. Diseases of the bladder	204	1.30	74	.46
37. Diseases of the urethra	127	.80	110	.69
38. Diseases of the male genitalia	385	2.45	257	1.61
39. Diseases of the female genitalia	147	.95	889	5.60
40. Puerperal states	197	1.25	256	1.62
41. Unclassified or ill-defined	401	2.55	306	1.93
	15,795	100.00	15,864	100.00

* Approximately.

The parallel columns give the corresponding figures for a like number of cases (15,864) admitted during 1913 and 1914 to the Massachusetts General Hospital. This hospital also has a majority of surgical cases, and treats similar diseases, with the exception of eye and ear and obstetrical conditions. It, therefore, offers a fairly adequate basis for comparison.

From the above table it will be noted that specific infections and general diseases, parasitic infections, general injuries and infections of skin and subcutaneous tissues, diseases of bones and joints, diseases of the eye and of the rectum and anus, constitute more than two-thirds of the Chinese cases, but considerably less than one-third of the Massachusetts General Hospital cases. If there were at the latter a like number of eye and ear patients, its total would be 38%. The most notable differences are those relating to rectal diseases and parasitic infections, of the combined total of which the Massachusetts General Hospital has only 2.45%, as against 16.6%. Specific infections and general diseases and diseases of the bones and joints make up more than 20% in both.

The other most striking disproportions are of primary diseases of the blood and of metabolism, of which the Chinese hospital reports include only two and four cases respectively. In diseases of the circulatory and digestive system, kidneys and ureters, female genitalia and malignant disease, there are only from 16 to 33% as many Chinese as there are Europeans. About 60% of the European cases of disease of the liver and gall-bladder are cholelithiasis and 6% cirrhosis. Among the Chinese about 43% are of cirrhosis and none of gallstone.

Further analysis shows that in some instances the difference as to organic disease is even greater than the figures indicate. About 85% of the diseases of the stomach and of the intestines, for example, are classified as indigestion, gastritis, diarrhea, etc., while in the Massachusetts General groups only about 15 and less than 1%, respectively, are so diagnosed.

The relative incidence of disease is given in two-thirds of the Chinese cases.

TABLE II.

SPECIFIC INFECTIOUS DISEASES AND GENERAL DISEASES.

	CASES	APPROX. PER CENT.
Tuberculosis	22	
Pulmonary	141	
Abdominal	31	
Pott's disease	15	
Of the joints	164	
Of bone	39	
Of the skin	65	
Of the lymph nodes	129	
Of the genitals	12	
Unclassified	8	
Syphilis	582	21
Gonococcus infection	386	14
Enteric infection	15	
Typhoid	198	
Paratyphoid	25	
Dysentery—cause unknown	176	
Amoebic dysentery	17	
Bacillary dysentery	11	
Balantidie	1	
Miscellaneous infections.		
Trachoma	276	10
Beri Beri	166	6
Chronic infectious arthritis	157	6
Purulent infections.		
Septicemia, pyemia	50	2
Relapsing fever	35	1
Pneumonia	37	1
All others	60	2
TOTAL	2781	100

Tuberculosis and venereal disease constitute 57% of the cases. Enteric infection, beri beri and arthritis bring the total up to 84%. Of the tuberculous infections, those of the bones and joints total 34%, those of the lungs 23%. It seems probable, however, that a much larger proportion of patients with bone and joint disease than with pulmonary disease seek medical advice.

Of the venereal patients 60% are luetic. The stage and part affected is, for the most part, unspecified. "Buboes" make up 60% of the non-luetic venereal cases. A little more than 50% of the enteric infections are of the typhoid group. Pneumonia seems rare as compared with its incidence among Europeans. Trachoma and beri beri, on the other hand, constitute almost a

sixth of all the cases. Under the unclassified group is included mostly the epidemic diseases, which appear to be infrequent from the fact that they are not, as a rule, treated in a general hospital. There are, for example, only 19 cases of leprosy included, but the general impression as to its frequency is expressed by Jeffries and Maxwell: "Leprosy is smeared over the face of China like butter on bread—not in spots, but found just about everywhere." Smallpox is also very prevalent. During the decade ending in 1915 there was in Shanghai an average of 200 deaths per annum (1 in 3000) among the Chinese, and 9 per annum (1 in 2000) among the Europeans and Japanese from this ancient malady. Epidemics of cholera and of bubonic plague occur mostly in the south. In the annual report of the Foochow Hospital³ is this statement: "Again, as in former years, thousands of the city's teeming population have succumbed to the awful ravages of the plague. It seems impossible to get at exact numbers. The Chinese themselves merely approximate the reckoning by counting the number of coffins that pass through the city gates on some one day and multiply the number by the days of the summer season."

There are very few recorded cases of the exanthemata. Stanley⁴ writes, "Scarlet fever was practically unknown in Shanghai prior to 1900, and was probably introduced by foreign immigrants."

The relative incidence of the communicable infectious diseases in the Isolation Hospital, Shanghai, 1915, was as follows:

TABLE III.

	FOREIGNERS, INCLUDING JAPANESE		CHINESE	
	ADMITTED	DIED	ADMITTED	DIED
Smallpox	56	19	36	15
Cholera	0	0	0	0
Diphtheria	33	2	36	6
Scarlet fever	38	1	89	22
Tuberculosis	0	0	6	1
Plague	0	0	0	0
Measles	22	2	21	2
Relapsing fever	0	0	9	0
Beri Beri	0	0	23	3
Leprosy	0	0	2	0
Syphilis	0	0	2	0
Chancreoid	0	0	6	0
Gonorrhoea	0	0	236	0
Other diseases	29	1	467	6
	178	25	933	55

Population: foreigners, 18,000; Chinese, 600,000.

There are 35 cases of relapsing fever and 5 of typhus fever. Only 9 instances of tetanus are reported, which seems remarkable considering the relatively large amount of traumatism and the abundant opportunities for soil infection. There are three cases of anthrax. (Further typical cases are recorded in other reports.) There was doubt up to a few years ago as to the existence of this infection among the Chinese. In view of the most recent work on an-

terior poliomyelitis, it seems remarkable that there should be only one case of the disease—this one showing anterior horn lesion at autopsy. Kala-azar is reported as prevalent in some quarters. Rabies, while not included in the reports, is common in Shanghai. In 1915, "70 people were given the Pasteur treatment, in 37 of which the animals were proven rabid by inoculation."⁵

TABLE IV.

DISEASES DUE TO ANIMAL PARASITES.

	CASES	APPROX. PER CENT.
Ascariasis	876	43
Uncinariasis	451	22
Faciola	284	14
Tricocephalus	215	11
Malaria	116	5
Schistosomum japonicum ...	7	1
Ringworm	5	
Others	9	
Unclassified	90	4
	2053	100

Inasmuch as 866 of the cases of ascariases and 371 of uncinariasis were reported from one hospital, these figures are not representative. However, that in China, he who seeks for parasites finds, is indicated by the comment in this hospital report⁶ on the increased number of these cases. It is stated that it was due to "a more careful and systematic search." One Shanghai hospital reports:⁷ "Out of 756 patients examined, only 323 were found to be free from intestinal parasites, i.e., 57.3% infected, 42.7% free."

Of parasitic infections which seem endemic to certain areas may be mentioned kala-azar, peragonium westermanii, schistosomum japonicum, fasciolopsis buski and clonorchis sinensis. Goiter and vesical calculus also seem endemic to certain sections.

TABLE V.

GENERAL INJURIES AND DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUES.

	CASES	APPROX. PER CENT.
Wounds	874	33
Abscesses	582	21
Ulcers	843	31
Contusions	269	10
Sepsis cellulitis, etc.	89	6
Carbuncles, furuncles	75	
Gangrene	19	0
	2754	100

It will be noted here that trauma constitutes 42% of all cases; and infections, excluding ulcers, 27%. About a third of the cases of trauma are gunshot wounds in soldiers. Excluding these, there are almost as many cases of infection as of trauma. The nature and site of ulcers is not stated. Regarding them Jeffries and Maxwell⁸ write: "Probably every form of leg ulcer known to man is found in this land . . . The majority are probably gummatous, with varicose a good second." Eggers⁹ calls attention to the occurrence of spirochetes and a

fusiform bacillus in the phagedenic "tropical" ulcer, occurring especially in Central China.

TABLE VI.

DISEASES OF THE BONES AND JOINTS.

	CASES	APPROX. PER CENT.
Fractures	420	23
Necroses and osteomyelitis ..	347	36
Dislocations	110	11
Other joint diseases	97	10
	974	100

These cases are exclusive of 218 cases of tuberculosis of bone. Fractures and dislocations make up more than half of all the cases. Of the fractures, two-thirds are of the lower extremity, and are equally divided between femur and leg. There were seven cases of dislocation of the hip. The bones affected in necrosis are for the most part not stated. Ankylosis and arthritis make up most of the joint cases. The elbow and knee seem most often affected.

TABLE VII.

DISEASES OF THE EYE.

	CASES	APPROX. PER CENT.
Cataract	235	15
Entropion	222	15
Conjunctivitis	211	14
Trichiasis	119	8
Pterygium	117	8
Corneal ulcer	102	6
Keratitis	80	5
Leucoma	54	4
Chalazion	32	2
Blepharitis	32	2
Scleritis	26	2
Hordeolum	22	1
Glaucoma	17	1
Amaurosis	17	1
Iritis	15	1
All others	223	15
	1524	100

Trachoma, included under specific infectious diseases, numbers 276 cases. Cataract is not as common as in other Oriental countries, notably India. Cataract, entropion and conjunctivitis make up 44% of the total. Maxwell¹⁰ says: "Every form of conjunctivitis that we know of is found," and "that for entropion is one of the commonest operations we are called upon to perform in China."

It may be of interest to consider some of the most striking relationships brought out in the groups constituting the remaining one-third of these 15,800 hospital patients. There are recorded under diseases of metabolism only three instances of diabetes mellitus and one of scurvy. Reed,¹¹ however, from replies received to a questionnaire, sent to 150 Western trained physicians, concludes that "it (diabetes mellitus) will be found increasingly prevalent in China as observation is extended to the better class of society." Most of the lesions caused by physical agents, excluding mechanical trauma, are due to burns. Only six cases are recorded. When

one considers the precautions Europeans are forced to take against the intense sunlight, this seems remarkable. The Chinese go about bareheaded with impunity. The cases of poisoning are mostly attempted suicides; opium was the drug used in half of 146 recorded cases. The number of opium suicides is said to be decreasing markedly with the increasing difficulty in obtaining the drug. An increasing number are using the inorganic acids, kerosene, salt, nuxvomica, gamboge and gold rings. There are only two cases of chronic alcoholism.

TABLE VIII.

THE DISTRIBUTION OF 224 CASES OF MALIGNANT DISEASE IS AS FOLLOWS.

	CASES	APPROX. PER CENT.
Breast	26	12
Stomach and liver	12	6
Male genitals	12	6
Peritoneum, intestines, rectum ..	9	4
Skin	9	4
Buccal cavity	8	4
Female genitals	7	3
Urinary organs	1	0
Unclassified	126	60
	210	

Incidence and mortality from malignant disease are almost synonymous terms in China, where so few apply for surgical relief, even in the late, hopeless stage. It is, therefore, of interest to consider the death rate as found in the available health reports. Hoffman,¹² in a study of cancer mortality throughout the world for 1908-1912, groups the cases as follows:

TABLE IX.

MORTALITY FROM CANCER IN THE REGISTRATION COUNTRIES OF THE WORLD, 1908-1912.

CONTINENT	POPULATION	DEATHS FROM CANCER	RATE PER 100,000 POPULATION
Africa	9,041,806	3,018	33.4
America ..	382,549,311	251,438	65.7
Asia	272,814,926	148,447	54.4
Australia ..	27,886,740	20,345	73.0
Europe ...	1,431,996,961	1,026,716	76.6
	2,124,289,740	1,519,964	71.6

TABLE X.

THE MORTALITY FROM CANCER IN THE COUNTRIES OF ASIA.

	POPULATION	DEATHS FROM CANCER	RATE PER 100,000 POPULATION
Ceylon ...	70,076,320	1,133	5.6
Hongkong.	1,737,310	140	8.1
India	4,456,200	522	11.7
Japan	242,460,425	145,965	60.2
Penang ..	1,291,689	143	10.3
Philippines	1,190,154	325	27.3
Shanghai .	68,684	38	55.3
Singapore.	1,434,780	181	12.6
	272,814,962	148,447	54.6*

* The data are given for Ceylon, 1907-1911; for Hongkong, 1907-1911; for India, City of Calcutta, 1908-1912; for Japan, 1905-1909; for Penang, 1909-1913; for Philippine Islands, City of Manila, 1909-1913; for Shanghai, 1909-1913 (Europeans only); for Singapore, 1906-1910.

These figures, the author points out, are tentative and trustworthy only in an approximate sense. They would seem especially so for Asia. It will be noted, for example, that the proportion for this continent is based on 148,447 deaths. 145,965 (98.4%) of which are Japanese. For China the estimate would have to be derived from 140 deaths, one in 3,000,000. Generally speaking, cancer mortality appears highest in those countries and in those particular localities in which modern medicine has reached its highest development.

The tables would seem to indicate that practically nothing is known as to the actual incidence of malignant disease among the Chinese, and it represents the extent of our exact knowledge of disease incidence in general in China.

Some estimate of the relative incidence by organs may be gained from the following:

TABLE XI.
MORTALITY FROM CANCER BY ORGANS.

ORGANS OR PARTS	CHINA*	HONGKONG	JAPAN	PHILIPPINES	INDIA CEYLON	UNITED STATES
Buccal cavity	3.8	6	2.3	14.6	31.9	3.9
Stomach and liver	5.7	30	61.2	20.2	25.2	25.59
Peritoneum, intestines and rectum	4.3	6	5.3	7.5	1	13.27
Female genital organs	3.3	12.6	15.8	18.1	3.7	15.43
			(31.1)			
Female breast	12.4	5	1.3	8.5	3.8	9.2
Skin	4.3	2.5	1.1	0.3	2.2	3.45
Other or not specified	66.3	37.7	13	28.1	31.7	15.12
All organs	100.1	99.8	100		99.5	100

* Incidence.

CASES
YEARS: 1913-1914, 1895-1914, 1909-1910, 1908-1913, 1911-1913, 1913.

It is of interest to note in passing the extraordinary disproportion in the incidence of carcinoma of the stomach and breast among the Japanese, as compared with that in the United States, and as compared with the available figures for China. The Japanese would seem to have ten times the incidence of gastric cancer of that found for China, and twice that for the United States. On the other hand, the Japanese seem to have only one-fourth and one-third as many cases of carcinoma of the breast. The proportion of cases affecting the female genital organs appears the same for Japan as for the United States.

TABLE XII.
THE 308 CASES OF BENIGN GROWTHS ARE CLASSIFIED AS FOLLOWS.

Sebaceous cyst	33
Lipoma	30
Fibroma	21
Cysts (unclassified)	21
Nasal polypi	21
Granulomata	16
Epithelioid	14
Myoma	14
Adenoma	14
Papilloma	9
Dermoid	8
Teratoma	8
Ovarian cyst	7
Osteoma	6
Angioma	5
Hydroma	3
Unclassified	78

308

Harelip constitutes 60% of 92 cases of congenital malformations. There are 9 cases of imperforate anus. Fifty-four per cent. of the skin cases are of eczema. There are 12 instances of dermatitis, 9 each of impetigo contagiosa and erythema multiforme. No especially rare skin diseases are represented.

There are 139 cases of disease of the circulatory system. Of these, 20% are of mitral insufficiency, 20% endocarditis, 19% organic heart disease, and 10% aortic insufficiency. There are 15% of aneurysm and one case of Stokes-Adams disease.

Under diseases of the blood, 270 cases are classed as "anemia" and one case each of sclerosis and myeloid leukemia.

Of the 54 cases of disease of ductless glands, 43 are of splenomegaly, 4 goiters and 2 of hyperthyroidism. The others are ill defined.

There are 333 cases of disease of the nervous system. Almost half of these are classified as cerebral concussion. There are 38 of cortical hemorrhage, 24 of neuritis, 11 each of vertigo, insanity and neuroses, and 8 of migraine. There are 2 each of tabes, paresis, spastic paraplegia, lateral sclerosis, multiple sclerosis and brain tumor. It may be of interest to note here that in one clinic exclusively for mental disorders, of 327 cases 33% were manic-depressive, 26% dementia precox, 15% general paresis, and 5% alcoholic psychoses.

Tonsillitis makes up about half of the diseases of the nose and throat, with peritonsillar abscess, pharyngitis and stomatitis making up most of the balance. Necroses and defective teeth constitute practically all cases of disease of the jaws.

Gastritis, dyspepsia and indigestion include 85% of the 207 cases under diseases of the stomach. There were 12 cases of cancer of the stomach included under malignant disease. Twenty-four (11.6%) were of peptic ulcer, one perforative with recovery following operation.

Of 213 cases of diseases of the intestines, 87% are classified as diarrhea, constipation or intestinal colic. About 8% are appendicitis.

Forty-three per cent. of 85 cases of diseases of liver and gall-bladder are grouped under cirrhosis and 26% under abscess. Seven are diag-

nosed jaundice and two cholecystitis. There is not a case of cholelithiasis.

Of 203 cases of disease of the abdomen and peritoneum, 70% are diagnosed ascites. Twenty-six per cent. are of herniae and 4 of peritonitis.

Sixty per cent. of 262 cases of disease of the respiratory system are of bronchitis, 11% pleurisy, 9% asthma, and 3% empyema. Most of the remainder are set down as "disease of the lungs."

Nephritis and a small, unclassified group make up the total of 142 cases of renal disease, except for 2 each of floating kidney and hematuria, and one each of pyonephrosis, pyuria and calculus. Vesical calculus constitutes 63% and "urinary retention" 26% of the diseases of the bladder. Practically all the cases of lesion of the urethra, except 9 of stone, are due to stricture. Phimositis and balanitis make up almost 90% of the cases of the lesions of the male genitalia.

The 123 cases of gynecologic conditions are made up of a few each of the commoner lesions, of which relaxed perineum is the most frequent. Of 195 cases of puerperal states, about two-thirds were normal labors, 10% were abnormal labors, and there are a few cases each of adherent placenta, placenta previa and puerperal fever, and one each of tubal pregnancy, phlegmasia alba dolens and ruptured uterus.

Fewer of unknown cause, debility, "various" and "unclassified" make up most of the 470 cases under the group of ill defined or unclassified diseases.

REFERENCES.

- ¹Jeffries and Maxwell: The Diseases of China. Phila., 1911, p. 25.
- ²Loc. cit.: p. 46.
- ³Annual Report of Foochow Mission Hospital, 1914, p. 6.
- ⁴Shanghai Municipal Council Report, 1915, p. 77a.
- ⁵Loc. cit.: p. 88a.
- ⁶Chenking Men's Hospital Report, 1914, p. 19.
- ⁷Sixty-ninth Annual Report of the Chinese Hospital, Shanghai, 1915, p. 8.
- ⁸Loc. cit.: p. 416 and p. 417.
- ⁹Eggers, E.: The Journal of Infectious Diseases. March, 1915, pp. 269-284.
- ¹⁰Loc. cit.: pp. 627 and 628.
- ¹¹Reed, Alfred C.: Diabetes in China. Am. Jour. Med. Sci., 1916, cli, p. 577.
- ¹²Hoffman, F. L.: The Mortality from Cancer throughout the World. Newark, N. J., p. 106, and Appendix C., 708-716.

HOSPITAL REPORTS.

- ¹Second and Third Annual Reports of the Hospital Department of the Harvard Medical School of China. Shanghai, 1914-1915, 1915-1916.
- ²Sixty-eighth and Sixty-ninth Annual Reports of the Chinese Hospital, Shantung Road, Shanghai. 1914-1915.
- ³Yungchun Hospital. Fukien Medical Report, 1912-1913, 1913-1914.
- ⁴Annual Report of the Church of Scotland Medical Mission. Ichang, 1913-1915.
- ⁵Report of the Josephine M. Bixby Memorial Hospital at Kityang for 1913-1914.
- ⁶Chenking Men's Hospital Report. 1914.
- ⁷Annual Reports of the Canton Hospital for the years 1913 and 1914.
- ⁸Temple Hill Hospital Report. 1914-1915.
- ⁹The John G. Kerr Hospital for the Insane. 1914-1915.
- ¹⁰One Hundred and One Hundred and First Annual Reports of the Trustees of the Massachusetts General Hospital. 1913 and 1914.

LIPOMA OF THE INTESTINE.

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THE principal benign tumors of the gastrointestinal tract are lipoma, fibroma, myoma and adenoma. They are relatively uncommon. Lipoma, which occurs most often, arises from the adipose tissue of the submucosa. It may be pedunculated or sessile. Though usually single, four cases of multiple tumors have been reported. That of the ileum is, as a rule, about the size of a walnut, whereas the lipoma of the sigmoid or rectum may grow as large as an apple. The tumor almost always retains its submucous situation. Subserous lipomata are rare, and should be discriminated from a pseudo-tumor, described originally by Virchow, which is merely an elongated and hypertrophied appendix epiploica. Through torsion, or atrophy of the pedicle, the tumor may become detached, continuing its existence as a free body within the peritoneal cavity. Clinically, pseudo-lipomata are unimportant. In a case reported by Hahn, however, one slipped through an adventitious opening in the transverse meso-colon and caused intestinal strangulation.

Hensel has collected 71 cases of gastro-intestinal lipomata, discovered at operations, autopsy, or by spontaneous extrusion, as follows: operation, 39; autopsy, 21; and spontaneous extrusion, 11. The anatomic distribution was as follows: stomach, 3; duodenum, 6; jejunum and ileum, 21; large intestine, 39; locations not given, 2; total, 71.

In addition to its academic interest, the subject of intestinal lipoma has a surgical significance, owing to the co-existence with intussusception. The frequency of this combination is demonstrated by the statistics of Treves, which show that lipoma is found in 8% of the cases of intussusception. Wichman, in studying 131 cases of intussusception, discovered 11 cases of lipomata; and Stetten, in his analysis of 67 cases of gastro-intestinal lipomata, discovered intussusception in 60% of the cases.

In an extensive study of tumor-intussusception, Kasemeyer presents the abridged histories of 284 cases. There were 85 malignant and 192 benign tumors. In the adult, intussusception is also related to those inflammatory conditions which simulate a tumor. The analysis of 284 cases gives the following figures:

A. Carcinoma	49
Sarcoma	26
Epithelioma	3
Malignant tumors without definite diagnosis	7
TOTAL CASES	85
B. Tumors without a biological diagnosis	7
C. Benign tumors (or tumor-like conditions)	
Polyp	60

Adenoma	13
Lipoma	20
Fibroma	6
Myo-glioma	2
Papilloma	4
Inverted appendix	18
Inverted diverticulum	42
Tuberculosis	8
Inflammatory tumors (nature not given)	7
Angioma	1
Cyst	1
Foreign body	1
TOTAL CASES	192

A case in point is the following, which came under the writer's care and observation in the Second Surgical Division of Fordham Hospital (Service of Dr. John J. McGrath):

F. S., age 50, was admitted December 22, 1915. The patient was moderately alcoholic; had no diseases of childhood; denied venereal disease; and had had no previous illness or attack similar to the present.

The present illness began two weeks before the day of admission with a sudden sharp pain in the epigastrium. The pain rapidly radiated to the lower right quadrant. The pain lasted but a short while. It soon returned, however, only to disappear soon again. Then colicky attacks occurred every day. They increased in severity and frequency until the day of admission. Vomiting took place several times. The bowels moved with purgatives and enemata.

Physical examination showed a well-developed man. The pupils were equal and reacted to light and accommodation. The tongue was coated and moist. The heart sounds were clear and strong. The arteries were somewhat thickened, though the pulse was regular and the tension about normal. The lungs were negative.

Abdominal examination disclosed a sausage-shaped mass in the lower right quadrant. Tenderness was readily elicited over the mass. Slight tenderness existed in the epigastrium. Moderate distention. No rigidity. Rectal examination negative. Modified tympany over the site of the mass.

The urine was cloudy. Specific gravity, 1028; acid in reaction; a slight trace of albumen; no sugar; and an occasional hyaline cast. Leucocytosis, 12,600; polymorphonuclears, 85%; transitionals, 1%; lymphocytes, 13%; and the large mononuclears, 1%.

A tentative diagnosis of acute appendicitis was made, and an immediate operation proposed.

Operation (December 23, 1915, Dr. A. H. Harrigan). Ether narcosis. The abdomen was opened through a right rectus incision. The appendix was easily delivered and found to be normal. Thereupon the entire mass occupying the iliac fossa was brought forward and analyzed. It was found to be an ileo-colic intussusception. The ileum had passed through the ileo-cecal valve, entered the cecum, and passed half way up the ascending colon. By palpation throughout the wall of the cecum could be felt a small, hard mass about the size of a marble. The intussusception was reduced by manual traction, though with difficulty, for the ileum was markedly edematous. Following the reduction, the ileum was carefully examined and, at a point four and one-half inches from the ileo-cecal valve, a small tumor could be felt lying within the lumen of the intestine. The ileum was opened by an incision trans-

verse to the long axis. The incision was placed directly over the tumor, which was found to be a pedunculated growth arising from the mucosa on the mesenteric border. The pedicle was ligated with catgut and the tumor removed. The mucous membrane at the base was brought together with catgut. The opening in the intestine was closed with linen. Three rows of sutures were used. The abdominal incision was closed in layer fashion. No drainage.

The post-operative course was exceedingly serious. A severe broncho-pneumonia developed, which, however, he passed through in splendid shape. There was a superficial infection of the suture line, which rapidly healed. The patient was discharged February 2, 1916, in excellent condition. Several months later the writer presented the patient before the Surgical Section of the Academy of Medicine. He is now in excellent health, and has no return of the symptoms.

Pathological examination (No. 5543, Fordham Hospital) demonstrated a lipoma. The tumor after removal measured 6 cm. by 6.5 cm.

As the subject of intestinal lipoma is intimately related to that of tumor intussusception, a cursory review of intussusception in general is presented in order to complement the discussion.

It is not clearly understood how and by what means intussusception is produced. Though various theories are extant, the subject remains unsolved, though it is evident that the condition arises from an error or anomaly of peristalsis.

J. E. Peyer, the first to view intussusception as a special form of intestinal obstruction, formulated a theory to explain its occurrence. He believed that a short part of the intestine becoming paralyzed took within itself, as it were, the portion of intestine lying immediately above, which previously had become narrowed from excessive peristaltic contraction. This theory received general recognition for many years. There is no question that local intestinal paralysis may be a decisive factor in the production of intussusception. Indeed, this possibility is conceded by Nothnagel. There is, however, no evidence, experimental or clinical, to support Peyer's theory.

The views of Nothnagel, which are directly opposed to those of Peyer, were based on the results of carefully considered animal experiments. He found that electrical stimulation of the intestine of the rabbit caused a ring-like contraction. Rapidly following this, the intestine below this point turns up and curls over the contracted part, like an inverted umbrella. Invaginations have been obtained which measured several centimetres in length and which continued ten minutes. Wilms, who is a strong supporter of Nothnagel's theory, believes that the ring-like contractions furnish a fixed point over which the longitudinal fibres are able to act. This experimental work of Nothnagel should be repeated in view of the present knowledge of peristalsis furnished through the recent investigations of Bayliss and Starling.

Several of the older writers—Dance, Cruveilhier, Brinton and Bristow—believed that intussusception was initiated by a spasm or tetanic contraction of a limited portion of the intestine, the contracted part in turn being driven by active peristalsis into the segment below. Brinton emphasized the importance of the longitudinal fibres, which he believed aided greatly in pulling the contracted part.

According to some authors, the spastic theory fails to explain satisfactorily all varieties of intussusception. This view is strengthened by a study of the cases of annular carcinoma, sarcoma, and infiltrating tuberculosis of the intestine, associated with intussusception. As Kase-meyer pointed out, these diseases tend to produce a marked intestinal rigidity, which should make an additional contraction or narrowing remote or impossible. The usual interpretation of this event is that vigorous peristalsis drives, the rigid diseased portion down into the normal intestine, where it is firmly held.

With certain tumors, as lipoma, myoma or polyp, the mechanism of intussusception is simple. It is believed that the tumor, from its submucous situation and form, may act like a foreign body and evoke powerful peristalsis, which forces the tumor down into the intestine below, where the circular muscle fibres seize and hold it firmly, provided peristalsis is continuous. Naturally, that part of the wall of the intestine which corresponds to the base or point of attachment of the tumor is invaginated into the intestinal canal so as to cause a funnel-shaped depression of the intestinal wall. If peristalsis is powerful and the pedicle relatively weak, the tumor may become detached and subsequently expelled. This explains the cases of spontaneous extrusion.

Fuchs described the formation of this funnel-shaped depression as seen by him during the course of an operation. Smolie, during the course of an operation for a polypoid adenoma of the ileum, was able to manipulate the tumor so as to reproduce at will the characteristic funnel-shaped depression. Ewald and Salomon furnish additional evidence, the latter offering definite post-mortem verification.

This mechanism of tumor intussusception explains certain variations in the clinical picture. Many cases present a temporary abatement or cessation of the symptoms, which indicates partial or complete relief of the obstruction. In considering the mechanism of tumor-intussusception, it was assumed that the subjacent intestine held the tumor firmly. It is reasonable, however, to suppose that the tumor occasionally escapes from the grip of the intestine, permitting thereby the invaginated part to resume its normal position. The occurrence of these abortive attacks would easily explain the intervals of freedom so frequently noted in the case histories.

Stenosis seems inevitable if the lipoma reaches an appreciable size. That this complication does

not occur oftener is due, most likely, to the elasticity and dilatability of the intestine. Moreover, the ease with which the tumor can be displaced aids in permitting a free fecal current.

In general, the existence of intestinal obstruction furnished the indication for operation in most of the cases operated upon. The presence of an abdominal tumor determined operation in a few instances.

The symptoms of intestinal lipoma are necessarily vague and variable, according to the location and size of the tumor. Stenosis from obstruction would appear to be rare. The treatment of lipoma is practically that of tumor intussusception. Spontaneous cure by extrusion is uncertain and dangerous, as perforative peritonitis has resulted. The irrigation treatment is of no avail.

The procedure employed varies according to the site of the lesions; also, the condition of the patient may affect the nature and type of the operation employed. A patient extremely toxic from prolonged obstruction may permit but a modified operation. Among the operations available are manual reduction, enterostomy, enterotomy, and intestinal resection in one or two stages.

In general, the principles underlying the treatment of acute intestinal obstruction are here effective.

BIBLIOGRAPHY.

- Andree, K.: Resektion des Ileocaecal-Teiles wegen Invagination durch submucöses Lipom. *Bruns Beiträge z. klin. Chir.*, Vol. 83, 1913, p. 115.
 Collins, Clifford M.: Two Cases of Obstruction of the Bowels from Unusual Causes. *Surg., Gynec. and Obstet.*, Vol. xvii, 1913, p. 512.
 Ehrlich: Zur Kasuistik der Intestinal Lipome. *Bruns Beiträge z. klin. Chir.*, Vol. 71, 1911, p. 384.
 Ewald: Berliner klin. Wochenschr., 1898, No. 44, p. 982.
 Hahn, F.: Zur Kasuistik der Darmlipome. *Münch. med. Wochenschr.*, Vol. 47, No. 9, 1900, p. 288.
 Hellstrom, N.: Kasuistische Beiträge zur Kenntnis des Intestinal Lipome. *Deut. Zeitschr. f. Chir.*, Vol. 84, 1906, p. 488.
 Heusel, Albert: Ueber Darmlipome und deren Komplikationen. Gießen, 1913. R. Lange.
 Hiller, Th.: Ueber Darmlipome. *Bruns Beiträge*, Vol. 24, 1899, p. 509.
 Hohnseder, F.: Zwei Darminvaginationen aus seltener Ursache (1 lipoma). *Medizin. Klinik*, Vol. ix, No. 23, 1913, p. 905.
 Kasemeyer: Tumorinvagination des Darm. *Deut. Zeitschr. f. Chir.*, 1912, B. 118.
 Koselski: Ueber die Lipome des Darm. Inaugural Dissertation, Gießen, 1909.
 Langemak: Zur Kasuistik der Darmlipome. *Bruns Beiträge z. klin. Chir.*, Vol. 28, 1900, p. 247.
 Leubuscher: Virchow's Archiv. Bd. 85, 1891, p. 83.
 Ribbert: Lehrbuch d. Allgemeinen Pathol., 1915, p. 532.
 Salomon: *Charité Annalen*, 1878, Bd. 5, p. 146.
 Smoler: Beiträge zur klin. Chir., 1902, Bd. 36, p. 139.
 Steffen, D.: The Submucous Lipoma of the Intestinal Tract: a Report of Two Successfully Operated Cases and an Analysis of the Literature. *Surg., Gynec. and Obstet.*, Vol. ix, 1909, p. 156.
 Tromp, F.: Zur Kasuistik der inneren Darmlipome. *Münchener med. Wochenschr.*, Vol. 62, No. 36, 1915, p. 1215.
 Wullstein-Warne: *Lehrbuch der Chir.*, Vol. ii, p. 122.
 Wilms: *Ileus*, p. 668.

MEDICAL SOCIETY OF THE MISSOURI VALLEY.—The twenty-eighth semi-annual meeting of the Medical Society of the Missouri Valley was held in Keokuk, Iowa, on March 22 and 23. The program consisted of twenty papers on medical and surgical subjects, exclusive of addresses.

A CONTRIBUTION TO VEGETATIVE NEUROLOGY: TOUCHING UPON HEART ACTION, STATUS-LYMPHATICUS, AND SO-CALLED VAGATONIA AND SYMPATHICATONIA.

BY EDWARD A. TRACY, M.D., BOSTON.

ON stroking the skin of the normal individual there appears a brief vaso-dilation of the underlying blood vessels, followed in about fifteen seconds by a vaso-constriction that lasts a few moments. This has been found to be the normal reaction of the skin to stroking.¹ The vaso-constriction component of the normal reaction has been shown to be due to stimuli coming over the sympathetic fibres together with adrenin in the blood stream,² and as it is this finding which is the principal basis of the present contribution to vegetative neurology, it shall be herein considered in some detail.

Physiologists teach us that adrenin is a substance secreted by the suprarenal glands, given off constantly to the blood stream,³ and that it is readily osmotic.⁴ It has a very strong attraction for smooth muscle tissue, and when it comes into conjunction with the latter, puts it into tetanoid contraction. Both the facts of its ready osmosis and its tetanoid contraction producing property, when in conjunction with smooth muscle tissue, we can readily demonstrate upon ourselves by injecting subcutaneously a drop of adrenin solution into an arm. Shortly after making the injection, the skin over its site will be seen to blanch, due to the intense contraction of the local blood vessels. At first there is no sign of the pilo-motor muscles being involved, but a little later the pilo-motor muscles in the blanched area will go into tetanoid contraction, due to the adrenin reaching them by osmosis. After an hour or more, the blanching disappears and the skin becomes quite normal.

What are the changes that have taken place in the tissue involved? So far as I know, physiology does not teach us. But it seems probable that adrenin has an intense attraction for some constituent of smooth muscle tissue, and that when conjunction occurs, these substances unite to form a new compound that gives the character of tetanoid contraction to smooth muscle tissue. This new compound after a while osmotic out of the smooth muscle tissue, and the smooth muscle becomes as it was before the addition of the adrenin. What this compound may be, it is for the chemist to determine. All that we can say is that adrenin disappears in the process of performing its functions in the body. Knowing the tetanoid-producing action of adrenin on smooth muscle tissue, this action will now be considered in relation with reflex vaso-constriction—the vaso-constriction resulting from stroking the skin. As previously stated, the skin of a normal individual, when stroked, gives the re-

action of vaso-constriction, this appearing as a whitish streak (in Caucasians). The writer found some patients in which no reflex vaso-constriction appeared after stroking. These patients, a few minutes after having had injected into them, therapeutically, a dose of adrenin, gave the reaction of vaso-constriction when again stroked. Let us consider attentively the phenomena in these cases. Stroking causes more stimuli to flow over the nerves concerned in the phenomena, that is, it increases the tonus of the sympathetic fibers—if we regard the tonus of a nerve to measure the amount of stimuli going over it. In the cases mentioned—those of patients without the reflex of vaso-constriction to stroking—we could increase the tonus of the nerves, that is, increase the stimuli flowing over them, as much as is possible by stroking, and yet no vaso-constriction resulted. In other words, increasing the tonus of the sympathetic nerve fibres—the nerves concerned in vaso-constriction—does not cause vaso-constriction. The same patients, shortly after having had an injection of adrenin, gave the reflex-vasoconstriction on stroking. The only change in the conditions was the addition of adrenin to the blood stream. It must be granted, therefore, that reflex vaso-constriction is caused by increase of nerve stimuli plus adrenin in the blood stream.

The stroking of the skin increases the flow of stimuli over the sympathetic fibres and, as a result of this increase, the smooth muscle tissue of the blood vessels takes up adrenin from the blood stream and goes into tetanoid contraction. Without the increase of nerve stimuli the adrenin remains in the blood, and no tetanoid contraction of the blood vessels' musculature occurs. Knowing the attraction that exists between smooth muscle tissue and adrenin, we can liken this feature of the phenomena of reflex vaso-constriction to oxygen and hydrogen gases in a container, their conjunction or union—the explosion—is lacking, until a spark be applied. We can regard smooth muscle tissue as containing a substance that has such an affinity for adrenin that under appropriate conditions a like explosion or union will be effected. The current that causes this union is the increased nerve current—stimuli—coming over the sympathetic fibers, whose endings touch both muscle fiber and adrenin.⁵ Or we may consider the neuromuscular end-plates as doors that open for the admission of adrenin into the smooth muscle fibers. The doors are opened as long as nerve stimuli flow over the nerve; the greater the amount of stimuli the more open is the muscle fiber to let in adrenin from the blood stream. Analogies such as these are intended simply to aid us in the conception of the phenomena. What appears to be probable is this: two substances having a chemical affinity for each other are brought together, a new substance formed, and energy set free in the process, all occurring under the control of the stimuli—nerve current—

coming over the sympathetic nerve fibers. From a study of the phenomena of reflex vaso-constriction it may be deduced that vaso-constriction is caused by stimuli coming over the sympathetic nerve fibrils acting on the hormone adrenin and the smooth musculature of the blood vessels. Reasoning from analogy, we may state that vaso-dilation is caused by stimuli coming over the autonomic fibers and acting upon the hormone x and the musculature of the blood vessels, as a result of which the musculature actively relaxes or dilates. Hormone x , (so termed because it has not been identified by physiological chemistry), and called by Eppinger and Hess "autonomyn," comes mainly, it appears to me, from the thyroid, because I have noticed that thyroid extract, when fed to patients, increases the reflex vaso-dilation, and also that this reflex is increased in Graves' disease (hyperthyroidism). Confirmatory of this view is v. Cyon's experimentation on thyroidless animals. He found a diminution of the excitability of the vagi to electrical stimulation in such animals.⁶ It is probable that the anterior hypophyseal tissue and the thymus also give hormone x to the blood stream.

With this view of the relation of vegetative nerve stimuli and hormones in mind, how interesting does the action of the heart appear. The heart may be considered as a mass of muscle tissue reacting to its vegetative nerve supply and the hormones in the blood stream just as the musculature of the blood vessels reacts to the same nerve supply and the same hormones. The autonomic nerves, together with hormone x , cause the heart to dilate, and just as in the blood vessels of the skin, this dilation is an active process. The sympathetic nerves of the heart, with the hormone adrenin, cause the contraction of the heart, due apparently to the chemical decomposition of adrenin, caused and controlled by the stimuli coming over the sympathetic fibers. The musculature of the heart differs somewhat from that of the blood vessels; this differentiation may be due to the necessity of a speedier combustion of the hormones x and adrenin to produce the active dilations and contractions that mark the working of this most powerful organ. This view of heart action explains the occurrence of death in status thymolympathicus, the cause being superabundance of hormone x in the blood and insufficiency of adrenin. The dilation of the heart is provided for, but the insufficiency of chromaffin tissue causes lack of adrenin, without which the heart cannot contract, no more than, as we have seen, the blood vessels can. Cases of status lymphaticus may be benefited by adrenin treatment, and, I believe, operations undertaken on patients in this condition will be safer if adrenin in the blood stream be provided for. Such cases may be diagnosed by absence of anemic dermatography, showing lack of adrenin in the blood stream.

It seems to the writer that Eppinger and

Hess, in their splendid contribution to clinical medicine entitled "Vagatonia," are hampered by their conception of vegetative nerve tonus.⁷ In their book a hypertonic condition of the vegetative nerves is assumed in order to explain their clinical observations. No proof, however, is given that the nerves are really hypertonic, that is, carry more stimuli from their nuclei than normal nerves. As has been shown, increasing the tonus of the sympathetic fibers, causing more stimuli to flow over them, produces no result without the presence of a sufficiency of adrenin in the blood vessels innervated by these fibers. The conditions of patients described in the literature as vagatonia and sympathicatonia appear, in the light of experimentation and observation herein described, not to be due to an increase of tonus of the nerves involved, but in reality are due to a hyper-content of one or both hormones, the tonus of the nerves being normal. I would except the psychopathic cases in which Eppinger and Hess noted astonishing reactions of both branches of the vegetative system in their clinical tests with pilo carpine and adrenin. With the brain—the center from which stimuli originate—diseased, it can readily be comprehended that a variation from the normal tonus of these nerves, that is, a variation in the amount of stimuli coming over them, might be expected. In point of fact, I have observed a demonstrable change of tonicity of the vegetative nerve fibers in cases in which the brain was evidently diseased.

It appears probable that the vegetative nervous system in normal condition conveys stimuli from the brain centers to their end organs, and that these stimuli act on the chemical compounds termed hormones, in the blood stream, so that new compounds are formed. In the formation of these compounds energy is set free that produces mechanical work, or the compounds formed are the assimilatory or dissimilatory compounds necessary for the accomplishment of normal metabolism. If the hormones are in excess of the normal amount (we can readily cause an excess by injecting pilocarpine, the analogue of hormone x , or by injecting the hormone adrenin), the resulting effects can be attributed to this excess of the relative hormone, without assuming to be present an abnormal tonus of the vegetative nerves involved. A demonstration of the truth of this view for the autonomic nerve fibrils is witnessed when we inject subcutaneously a drop of pilocarpine solution. The skin, locally, about the site of the injection, reddens and sweats (small, glistening points are seen, and moisture is felt if we pass a finger over the area). In this case the tonus of the autonomic fibers is evidently the same as before the injection, but the analogue in action of hormone x —pilocarpine—is in excess locally in the blood.

Constant abnormal tonus in the nerves (excluding that from drug action) is a serious con-

dition, implying organic disease, and should not lightly be invoked to explain clinical conditions that may be more rationally explained on the basis of the observations and experiments described in this paper.

REFERENCES.

- ¹ Tracy: BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. CXXV, No. 6, p. 197.
- ² *Ibid.*: p. 198.
- ³ Faltus: The Ductless Glandular Diseases. Phila., 1916, p. 343.
- ⁴ Elliott: Journal of Physiology, 1905, Vol. 32, p. 454.
- ⁵ Hügler: Ergebnisse der Neurologie und Psychiatrie. Zweites Band, 1912, p. 149.
- ⁶ Faltus: The Ductless Glandular Diseases. Phila., 1916, p. 108.
- ⁷ Eppinger and Hess: Vagatonia. Nervous and Mental Disease Monograph Series, No. 20. New York, 1915, p. 21.
- ⁸ *Ibid.*: p. 71.

THE CAUSE OF POLIOMYELITIS.

By HORACE GREELEY, M.D., BROOKLYN, N. Y.

In a recent article* I briefly described bacteriological work showing that the organism found in the brains and cords of cases which succumbed to our recent epidemic of poliomyelitis, was a bacillus of the group known to cause distemper in many of our domestic animals. That while by a number of bacteriologists the organism had been described as a streptococcus it could, at will, be transformed to a bipolar, spore-forming bacillus and then again be made to assume the streptococcus formation.

The streptococcus form appears when the organism is cultivated in blood serum, and the bacillus form when cultivated on solid Loeffler blood serum the surface of which is watered (wet) with a mixture of blood serum and bouillon containing linewater. Replants from the latter, on plain Loeffler blood serum without wetting, continue to show the bacillus form, which is also the case in bouillon.

In the streptococcus form the organism is Gram-positive, except in old cultures when vacuolization tends to make some individuals appear Gram-negative. In the bipolar bacillus form, as produced on the watered cultures, the poles alone are Gram-positive. Replants on plain solidified Loeffler blood serum and in plain bouillon may be grown in which all the bacilli are Gram-negative. In the latter the organism is motile and shows a single flagellum. Cultures developed according to the technique of Flexner and Noguchi showed the pleomorphism described by them, but when treated as described above developed into pure cultures of the bacillus.

In order to compare the bacillus isolated with the "streptococcus-like" organism described by Dr. E. C. Rosenow (*J. A. M. A.*) I asked for, and he very kindly supplied, a culture, which, when washed with the linewater-bouillon-serum mixture gave a sporulating bacillus, corresponding both serologically and culturally with those which I had isolated from the eight cases used in my experiments.

Intravenous inoculation into cats produced in a small percentage of cases muscle paralysis.

* Medical Record, January 13, 1917.

but in all, symptoms of distemper, and even death, with marked cerebral and spinal cord engorgement, when as much as 1 cc. of a virulent culture was employed. Similar results were obtained with rabbits. The organism was recovered in every instance from the cords and brains of the animals that came to autopsy.

The accidental installation of a drop of a fluid culture into the eye caused an abortive attack in an experimenter (myself) and the organism was recovered in scrapings from his throat, and a suspension of the same caused paralysis in a rabbit, and, when inoculated into a guinea pig, intraperitoneally, death within a week, with spinal cord congestion and cerebral engorgement and hemorrhage, the organism being recovered from the brain tissue. From contact (same cage) with the latter, two guinea pigs and a young rabbit contracted the infection and died, showing the same lesions and organism.

In a series of serum reactions (not yet published) in which the blood serum of animals, immunized to cultures (from cord tissue) from particular cases of human poliomyelitis, and blood from fifty cases of the recent epidemic were tested against particular cultures (including the one got from Dr. Rosenow and from distemper in dogs) evidence has been obtained indicating the existence of different strains of the organism and its intimate relationship to the organism of dog-distemper. The behavior of various cultures also tends to confirm this idea, although it is not yet apparent whether these differences are as fixed as in the case of the organisms of the colon-typhoid group.

An exceedingly important and illuminating characteristic of the organism is the readiness with which it grows in milk and at summer temperature (70 F.).

Further, as I have repeatedly found, cultures in milk survive the official pasteurization process (heating for a half hour at 142°-145° F.) so that this method would be no protection whatever to consumers against milk infected with the bacillus. In fact the killing off of other contaminants would favor an extensive growth of the poliomyelitis germ in milk kept at summer temperature.

I recently looked up the literature of the epidemiology of poliomyelitis bearing upon the incidence of the malady among infants and was struck by the almost entire absence of cases from among the exclusively breast fed. The epidemics studied comprised some 60,000 cases, and, when gathered from all the reports, the cases stated to have been among the exclusively breast fed were under 300. In the reports of various epidemics in Massachusetts the statement is made that there were "no cases among the exclusively breast fed."

I know of no data bearing on the incidence of the malady among exclusively breast fed infants in our recent epidemic but, since it is said that less than 11% of the cases were under one

year of age, it is evident that, at least, there were comparatively very few.

It is, of course, undeniable, from the nature of the infection, that contact cases may develop, and the percentage of the same may be indicated by the incidence of the disease among the exclusively breast fed exposed to other cases, since milk infection, except in the case of an infected mother, would be excluded. Furthermore, if the organism causing distemper (often with paralytic symptoms) among the domestic animals, coincidently with outbreaks of human poliomyelitis, so frequently mentioned in the literature, be actually identical with its certainly near relative, that causing infantile paralysis, then the per cent. of contact infection from animals to man will approximate the rate from man to man. However, the great mass of the evidence in the literature indicates that direct human to human transmission is of small importance.

It may be, in the development of the disease in even the most susceptible child, that massive doses of the organism are necessary, as, for instance, in large quantities of milk, either surcharged with the germs, or in which great multiplication of the organism occurs after ingestion.* The paresis of the intestines common at the onset of the malady, helps this theory, since the longer the infected material lay in the intestines the greater the number of germs that would gain access to the system.

In connection with the temperature at which I found the organism grew well, note the temperature range in New York City during the recent epidemic, and how the case incidence rose and fell as the mean of 70° was passed and surpassed.

MONTH	MEAN TEMPERATURE	CASES
May	59.3° F.	29
June	64.2°	756
July	73.8°	3863
August	73.6°	3306
September	66.0°	780
October	57.2°	193

* A most interesting "Report of a Possibly Milk-Borne Epidemic of Infantile Paralysis" by Dr. John C. Dingman, of Spring Valley, N. Y., appeared in the December number of the *New York State Journal of Medicine*.

NAIL PUNCTURE WOUNDS OF THE FOOT: RESULTS IN 100 CASES.

BY W. IRVING CLARK, M.D., F.A.C.S.,
WORCESTER, MASS.

THIS paper represents work done at Norton Company Hospital during the year 1916. In all cases the technic was the same, though the treatment was administered by different doctors and nurses. The work having been done upon employees covered by insurance, it has been possible to get accurate data upon the exact duration of disability for work from the insurance

company, while the hospital records give the number of dressings needed by each patient.

Nail puncture wound of the foot is a common surgical condition occurring among laborers, especially those doing construction work. The puncture wound usually occurs through a man stepping on a plank from which there are projecting nails. These naturally vary in length, but usually project from 1 inch to 1½ inches beyond the plank. In the majority of cases the nails are clean and sharp, and make a stab wound which penetrates the sole of the shoe, the sock and the foot. In every case the patient had removed the nail from the foot himself before applying to the Hospital for treatment. The majority of wounds occur upon the ball of the foot (62%), and there seems to be little choice as to which foot suffers. We find that they are about equally divided between the right and the left. Most of the injuries appear to be near the center of the ball, between the first and fourth toes. The nail, upon entering the foot, passes through the tough outer skin, penetrates the deep fascia, and then passes through the muscles and embeds itself between the metatarsals. The tendency seems to be for the metatarsals it strikes to slide away from the nail. In my whole series of 100 cases there was not one in which there was any evidence of a nail having penetrated the tendon sheath of the flexor tendon, or of injury to the tendon. It is generally believed that wounds of this type are very prone to become infected, because of the dirty shoe, the equally dirty sock and the still more filthy condition of the patient's foot. If not treated, these cases certainly become septic in many instances, as I have found from my general hospital experience. The same is true in a few cases here noted which presented themselves for treatment after an interval of a day or more following the accident. The majority of cases, however, were treated immediately following the accident, that is, within a period of fifteen or twenty minutes, and I attribute the good results to this proper treatment.

The method of treatment used is that recommended by Dr. W. G. Hudson of the DuPont Powder Company, in a personal conversation, and this method is at present in use at the DuPont Powder Company as well as Norton Company. The technic is as follows: The foot is thoroughly washed with hot water and soap, in order to get it as clean as possible. This is done rapidly and thoroughly, very hot water being used. The foot is then dried, and an area about 2 inches square around the puncture wound is thoroughly washed with alcohol. The sole of the foot is then painted over with commercial gasoline, and after this has evaporated one or two coats of tincture of iodine are applied in and around the wound. A sterile probe is then passed into the wound without pressure, and finds its way to the full depth of the wound. It is important that this manipulation be done

gently, and that the end of the probe be guided in several directions after passing through the skin, as the plantar fascia is liable to be distorted following the accident, so that at first the wound appears to be more superficial than it is, and the deeper hole must be found before the full length of the tract of the injury can be probed. After the probe fills the entire wound tract a hypodermic is filled with 10 cc. of tincture of iodine, U. S. P., and the needle is gently inserted following the probe as a guide, and hugging it closely until it has reached the bottom of the wound. The iodine is then injected very slowly and allowed to run out along the probe until the operator feels certain that the entire tract has been thoroughly washed out with iodine. The probe and needle are then withdrawn. (This injection of iodine is very painful, but the pain is of the bearable type and feels like a sharp burn. It lasts only from 30 to 45 seconds as timed by watch). A dry sterile gauze dressing is then applied. If the puncture wound is very deep the man is instructed not to work for the remainder of the day, but many cases have returned to work at once. We usually advise patients to return in twenty-four hours for observation, even though they are having no trouble. When there is pain it is almost invariably near the dorsal surface of the foot between the bases of the toes over the point of the terminus of the puncture wound. This tenderness and pain seldom lasts more than 48 hours, and is usually not sufficient to keep the man from work.

The following statistics may be of interest:

Total number of cases	100
FOOT INJURED.	
Right	50
Left	47
No report	3
	100
PART OF FOOT AFFECTED.	
Sole	37
Ball	5
Ball base of little toe	14
Ball base of great toe	15
Ball base of fourth toe	1
Ball base of middle toe	24
Ball base of second toe	3
Arch of foot	1
	100
Total number of dressings	194
Average number of dressings per case	1.94
	DAYS
Total time lost	29
Average time lost	0.29
Longest time lost	7
TIME LOST FROM WORK.	
	DAYS
2 cases	1
2 cases	2
1 case	3
2 cases	4
1 case	5
1 case	7

In three cases of my series infection was present at the time the patient came to the Hospital,

due to the wound having been received twenty-four hours or more previous to the patient's reporting to the Hospital. In each case the wound was slightly opened, and the same method of treatment given as in the clean cases. The results were as follows:

	DRESSINGS
1 case	2
1 case	2
1 case	3

No time lost from work.

The infection in these cases was very slight, consisting only of redness and one or two drops of pus exuding from the wound. In no case of the hundred here reported, or other cases which I have observed, has tetanus appeared, even in cases treated at the general hospital, where sepsis has been marked.

CONCLUSIONS.

1. Nail puncture wounds of the sole of the foot are not dangerous and seldom cause infection if promptly treated, when caused by clean nails projecting from a board, as occurring in the building trade and general construction.
2. This type of wound does not produce tetanus, except possibly in very rare instances.
3. A simple and effective method of sterilization of puncture wound may be obtained by injecting the wound with pure tincture of iodine.
4. These injuries, contrary to general belief, produce very little disability and require few dressings.
5. Prompt treatment is essential in order to get the best results.

Book Review.

Encyclopedia Medica. Second Edition. Under the general Editorship of J. W. BALLANTYNE, M.D., C.M., F.R.C.P.E. Vol. IV. Edinburgh and London: W. Green & Son. 1916.

This fourth volume of the English edition of Ballantyne's medical encyclopedia contains the topics from ear to filariasis inclusive. The separate articles are the work of distinguished British physicians in addition to the editor. The chapter on ptosis is by the late Dr. A. Lockhart Gillespie, that on eugenics by Dr. C. W. Saleeby and that on favus by Dr. Norman Walker. The work is abundantly illustrated with full-page plates and many text cuts. The section on embryology by Dr. Ballantyne is particularly to be commended. Many of the articles are revised and rewritten. The sections on eclampsia, otosclerosis and eugenics are new. This volume continues the value of its series as a permanent encyclopedic record of medical knowledge.

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THE ACTUALITY OF WAR.

On April 5 the Senate, and on April 6 the House of Representatives of the United States, by an overwhelming, though in neither instance unanimous vote, passed an official resolution declaring that a state of war exists between our country and Germany. All differences of opinion which previously existed about questions involved in this momentous action are now obliterated. Henceforth the whole duty of every citizen of the United States is to do his best share in the vigorous and efficient prosecution of this war to a successful conclusion. The determination, in each individual instance, what that most serviceable share shall be, may often present problems difficult of solution. For every physician, as well as for every other citizen, whatever his capacity, special training or opportunity may be, the sole guide in the solution of those problems should be loyalty of devotion to his country and to his profession.

A MEDICAL PROFESSION THAT IS STATISTICALLY STATIONARY.

SOME very interesting statistics on the medical profession of the United States are contained in the report of the Committee on Social Insurance of the Council on Health and Public Instruction of the American Medical Association recently published. From a canvass of the United States Census of 1910 it appears that this country has approximately one physician to every 600 of the population and that this proportion has remained the same for the past sixty years. Furthermore, the rate of growth of the medical profession has been rapidly declining, the number of medical graduates not much exceeding the loss by death and the abandonment of this profession for other pursuits. In the forty years from 1870 to 1910, teachers of music increased at the rate of 770; other teachers, 396; clergymen, 205; lawyers, 200; dentists, 410, and physicians, 153, while the population increased by 138 per cent. Thus the medical profession was the only profession of those enumerated that failed to increase substantially in proportion to the population. Although there has been an increase in the ratio of medical men to the population on the Pacific Slope, it has remained stationary in the Middle West and throughout the South it has declined, especially in the rural and semi-rural communities, so that in South Carolina, at the present time, the proportion is 1 to 1,176. This, however, is greater than the lowest of any of the nations of Europe that are tabulated, namely, Italy where the ratio is 1 to 1,484. On the Continent the ratios rise through 1 to 1,537 in England and Wales; 1 to 1,969 in France; 1 to 2,124 in the German Empire, reaching 1 to 7,865 in Russia.

Medicine is now a profession of the mature male married native-born population, according to these statistics. Approximately 40% of the practising physicians are over 45 years of age and some 25% are from 35 to 44 years old, and the percentage of single men is much smaller than in other professions and has declined in the last ten years. As one would expect, the large cities show a greater proportion of physicians to the population than do the smaller cities and the rural districts. Boston, for instance, with a population of 670,589 has one physician to every 357 citizens, while Chicopee, Massachusetts, with 25,401 inhabitants has one physician to every 1,115; the ratio for the state being 1 to 541.

Whether the gradually decreasing proportion of

physicians means inability of the masses to support more doctors, or stricter requirements for medical education, both on the part of the medical schools and the public, is not altogether plain. It may be interpreted fairly, however, as an indication that we are approximating the conditions in the older civilizations, that the era of hit-or-miss-it practice is passing and that the people are being served by a better trained, more mature medical profession.

THE MODERN TENDENCY TOWARD WEAK-FOOT.

WITH the evolution of the human species—its rise from a four-footed to a two-legged animal—the importance of the lower limbs, the feet especially, in locomotion, but particularly in maintaining equilibrium, has risen quite beyond ordinary conception. Indeed, present day civilization has brought in its train a condition of foot-atrophy from disuse. The elevator and the automobile, as the favorite means of movement, have left feet undeveloped and almost unnecessary. But the bane of this failure of foot development becomes visible when for any reason the feet must be conscripted, so to say, into use, as in military life with its marches, in athletics, or even certain industrial pursuits. Even without these calls, the increasing tendency to weak-foot is rendered obvious through the greater and greater demands for orthopedic aids to walking. Usually, however, these orthopedic aids in the incipient stages of weak-foot may do a great deal of harm. They still further rob the muscles of their rightful function of support; there is atrophy from disuse and then more artificial support—a sort of vicious circle. The indiscriminate use of artificial supports, usually arched quite beyond the normal and purposed for a sort of pseudo-overcorrection, is to be discouraged whenever possible. No arch support is properly applied unless patterned after a cast of the foot, so that it supports the arch as it is, while other medical or mechanical means are used to strengthen the muscles and to replace the arch.

Primarily flat-foot or weak-foot is weakness in the plantar flexors and invertors. This is very often congenital but usually acquired. It must continually be borne in mind that besides the main arch there is also a minor arch extending between the first and fifth toes. For the relief of weakness in either arch, proper foot exer-

cise to strengthen the offending muscles is most important. But it is imperative that weak-foot be diagnosed early. Pains in the calves of the legs radiating to the knee and even to the spine are the result of failure to keep the weight of the body on the arches. Unfortunately, these pains are very often diagnosed as "rheumatism." Quite remarkably, however, and unlike rheumatism, these pains disappear on lying down only to reappear on rising. Strong pedal muscles make strong arches. Exercises to develop these muscles will probably do more to re-establish the integrity of the arches in the early stages, and as a preventive measure, than even drastic orthopedic measures in the later stages.

Bad walking habits are other factors in the development of weak-foot. The normal foot should be straight—turned neither to the right nor to the left. The aboriginal foot and the young child's foot are straight. The normal foot is in a straight line from great toe to heel and maintained perpendicular to the mid line of the body. As much attention must be paid toward maintaining the feet in proper position as to the general carriage—but they probably go together anyway. The military requirement of keeping toes out and heels together was undoubtedly a great factor in weakening the arch and even in destroying it. For those with bad walking habits and weak feet, carrying the toes somewhat more inward is of good effect as tending to overcorrect.

Likewise, bad fitting shoes constitute a very great factor in the modern weak-foot. Shoes that do not conform to the normal shape of the foot injure it. The shoe must be built on the lines of the normal foot—straight line from great toe to heel.

Only a timely and vigorous campaign of education in the matter of proper footwear, foot habits, and foot exercises such as marches, hikes and systematic foot calisthenics can save us from becoming creatures who are neither four footed nor yet two footed, and certainly not sure footed.

THERMOMETER DISINFECTION.

PROBABLY no instrument in the armamentarium of the physician has so much constant use as the thermometer; no instrument that is so often in contact with infectious membranes of the body; and, needless to say, no instrument whose importance as a diagnostic aid is greater. Yet this instrument often receives the least amount of attention with respect to its cleansing and dis-

infection before use. When the now almost obsolete method of applying the clinical thermometer between folds of the skin, in the axilla, groin, etc., was very much in use, perhaps the danger of carrying infection from the unbroken skin was too slight to require extraordinary care. But with the use of the clinical thermometer in the buccal and preferably in the rectal cavities, which are recesses for much infection, it is surprising that the carrying of disease through the careless use of the thermometer is not more often reported, as it is more than a mere possibility. The theory of "air borne" infection is no longer tenable. Infection is spread by direct contact—discharges of patient with the sensitive mucous membranes of new victim. If carried through the air at all it is carried by the so called "drop-let infection" method in which the infective material is propelled through the air from one to another through coughing, sneezing, careless and boisterous talking. The careless use of the clinical thermometer obviates any difficulties that may be in the way of infective discharge reaching another person. The thermometer acts as a direct carrier. The sticky secretions that adhere to the thermometer are not easily removed by the usual simple immersion in water for a short time nor by holding it under cold running water for the same period. The pernicious habit of using one and the same thermometer for rectal as well as buccal application is fortunately not very common. It would seem to be barred from aesthetic, if for no other reasons. At any rate the disinfection of the clinical thermometer must receive the same consideration as other instruments used within the body. Of course, heat cannot very well be applied, but proper mechanical cleansing can—and when followed by some appropriate antiseptic solution in contact for an indicated time is as ideal a method of disinfection as can be expected under the circumstances. Much the safer plan would be for the physician to carry with him on each round a sufficient number of thermometers to use in rotation, the same one not again to be used until properly cleansed and sterilized. It goes without saying that in so far as thermometry is concerned every patient should have his own thermometer—but that, unfortunately, is not always possible to enforce except in protracted illnesses.

To emphasize the need of individual and properly sterilized clinical thermometers, B. E. Holsendorf, United States Public Health Service (Public Health Reports, March 16, 1917), has

devised for use at quarantine stations a convenient portable container for a large number of sterilized thermometers. The examination of passengers and crews under quarantine requires the use of thermometers on a large scale. No thermometer can very well be used on more than one person without proper treatment; and unless this treatment is afforded to a large number of thermometers before actual inspection, their treatment at inspection would cause a great deal of delay. Besides, it could not be done so well during the haste of inspection as during the leisure of preparation. Holsendorf's container is made to accommodate 40 thermometers. The disinfectant solution he uses is formalin. Just before use the rack and its load of thermometers are taken out of the formalin solution, rinsed in clean water and allowed to dry.

The moral of this device demonstrates the necessity of disinfecting the thermometers after use even by apparently normal individuals—let alone those to whom the physician is called to minister because of disease. For the physician practicing among the lower strata of society where the amount of infections seems to be larger and the possibility of carrying them great, this one element in the spread of infection could perhaps be best eliminated by the use of a device such as suggested by Holsendorf but on a scale commensurate with the circumstances.

REGISTRATION OF PHYSICIANS.

WHEN the original registration certificate of a physician in this State is lost, destroyed, or otherwise unavailable, a certified statement of its award should be obtained from the Board of Registration. This will be accepted by city or town clerks in compliance with the new law noted editorially in the JOURNAL of April 5.

MEDICAL NOTES.

NEW TUBERCULOSIS JOURNAL.—The publication of a monthly technical journal devoted exclusively to tuberculosis, the only one of its kind in English, is announced by the National Association for the Study and Prevention of Tuberculosis. The editorial policy of the new journal will be determined by a staff of seven experts appointed by the board of directors of the Association, consisting of Dr. Edward R. Baldwin, Saranac Lake, Editor-in-Chief; Dr. Lawrason Brown, Saranac Lake; Dr. H. R. M. Landis, Philadelphia; Dr. Paul Lewis, Philadelphia; Dr. M. J. Rosenau, Boston; Dr. Henry Sewall, Denver; Dr. B. S. Veeder, St. Louis.

Dr. Allen K. Krause, of Baltimore, the managing editor, is widely known as a worker in the research field of tuberculosis. He recently left Saranac Lake to take charge of the new division of tuberculosis in Johns Hopkins University.

The American Review of Tuberculosis, as the new publication is called, is the first technical journal on tuberculosis in this country. The intention of the National Association is to make it compare favorably with similar foreign journals.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.—The fourth annual meeting of the American Association of Immunologists was held on April 6 and 7 in the Academy of Medicine, New York City. An elaborate program had been prepared, consisting of twenty-seven numbers. The presidential address was given by Dr. Richard Weil on "The Relations Between Antigen and Antibody in the Living Organism." At the same time and place was held the annual meeting of the American Association of Pathologists and Bacteriologists. Programs may be obtained by application to the Secretary, Dr. H. C. Ernst, 240 Longwood Avenue, Boston, Mass. After the opening session on Friday morning, April 6, the Association adjourned to the Rockefeller Institute, where a special program had been arranged. It consisted of eight papers, including one by Dr. Flexner on "Defensive Mechanisms in Poliomyelitis," and one by Dr. Noguchi on "The Spirocheta of Infectious Jaundice."

LOOMIS SANATORIUM.—The recently published twentieth annual report of the Loomis Sanatorium, New York, for the treatment of tuberculosis, contains an interesting statement of a statistical study of all former patients of the Institution. A follow-up plan was begun and inquiries sent to former patients who were discharged up to October 31, 1915, a total of 1421 patients. Returns were received in 1229 cases, or 86.48%. Of the 1229 returns, 1108, or 90.16%, were reported alive; 90, or 7.32%, were reported dead; and 2.52% could not be found. Of the 1108 patients reported alive, 939, or 84.75%, are in a satisfactory physical condition; 145, or 13.09%, are in an unsatisfactory physical condition and 24, or 2.16%, could not be definitely ascertained.

NATIONAL ORGANIZATION FOR PUBLIC HEALTH NURSING.—The Fifth Annual Meeting of the National Organization for Public Health Nursing will be held in Philadelphia from April 26 to May 2. At this time will be held a joint convention by the American Nurses' Association, the National League of Nursing Education and the National Organization for Public Health Nursing. An interesting program has been arranged to cover the five days' meeting.

DEATH OF PROFESSOR VON BEHRING.—The death of Professor Emil von Behring, discoverer of diphtheria antitoxin, has been reported. In April, 1913, the discovery of a method of prolonged immunization against diphtheria, consisting of an injection of a mixture of diphtheria toxine and anti-toxine was announced by Professor von Behring at the congress of internal medicine in session at Wiesbaden. Tests made by Professor von Behring of the new method in the clinics of Magdeburg and Marburg had shown that the treatment was harmless and effective. Professor von Behring offered to supply clinics with the new prophylactic under proper guarantees of observation and registration.

VACCINATION AGAINST ANTHRAX.—A vaccine which will secure immunity in animals to anthrax has been perfected by the United States Department of Agriculture.

"The preventive vaccine recommended by the department is a development of the method devised about twenty-five years ago by Pasteur. Since then scientists have removed many of the objections to Pasteur's vaccine, and the new method is less dangerous to the animals treated and surer in its operation. The department now gives detailed directions for the administration of this treatment. It consists in ordinary cases of an injection on one side of the animal of ten cubic centimeters of anti-anthrax serum, followed immediately by a similar injection on the other side of the body of one cubic centimeter of spore vaccine.

"Stock owners are warned to obtain the serum and vaccine from reliable manufacturers only, and not to administer the treatment, unless the disease has appeared in the vicinity or the pastures on which the animals are turned out are known to be infected. Careless handling of the vaccine may result in spreading instead of controlling the disease. The principle underlying this treatment is the same as that which in man has resulted in the minimizing of death from smallpox, typhoid and other diseases. It consists in conferring upon men or animals an artificial immunity to the infection to which they are susceptible."

WAR NOTES.

FORSYTH DENTAL INFIRMARY OFFERS SERVICES.—The trustees of the Forsyth Dental Infirmary have offered its facilities to the committee having in charge work on soldiers' teeth. Dentists who are asked to volunteer their services will not need to provide instruments. The clinic room of 65 chairs and the entire equipment of the infirmary has been placed at the disposal of the committee for Saturdays and Sundays and for each evening beginning at 5 o'clock.

PREPARATION OF NEW YORK ORGANIZATIONS.—The State Charities Aid Association of New York has offered its services to the nation "in such form as may be considered advisable and most efficient." The New York Southern Women's Patriotic Committee with a membership of five hundred stated at a recent meeting that it favored universal service for women in "treating the wounded, cheering the sorrowful and assisting the country in any way possible should it become involved in war." Representatives of the Life Extension Institute have gone to Washington to offer the services of that organization to the government. The New York chapter of the Red Cross has announced itself ready to respond to all applications for aid from dependent families and relatives of national guardsmen who have been called into service again.

GERMAN HOSPITAL OF NEWARK, N. J.—The German Hospital Association of Newark, N. J., has tendered the government without reservation the use of its hospital, one of the largest in the city, with its staff of nurses and doctors.

LYNN HOSPITALS PREPARED.—The Lynn committee on public safety announces that the Lynn and Union hospitals have nearly completed the work of accumulating supplies and that each is now prepared to accommodate 150 patients.

RED CROSS FUND.—The Boston Metropolitan Chapter, American Red Cross, reports that it has raised \$52,373.10 of the sum desired to carry on its work. The assembling of supplies has kept pace with the receipts of funds and the completed equipment of linen, bandages and hospital garments will shortly be turned over to the Red Cross Military Supply Depot No. 1.

WAR RELIEF FUNDS.—On April 7 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$806,511.33
French Wounded Fund	213,558.84
Armenian Fund	169,694.13
French Orphanage Fund	91,651.61
Surgical Dressings Fund	80,519.47
Polish Fund	67,532.72
LaFayette Fund	25,967.03
French Phthisis Fund	13,536.04
Friends' Fund	11,239.77
Russian Ambulance Fund	5,770.00

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 31, 1917, the number of deaths reported was 277 against 245 for the same

period last year, with a rate of 17.86 against 16.80 last year. There were 44 deaths under one year of age, against 35 last year, and 78 deaths over 60 years of age against 71 last year.

The number of cases of principal reportable diseases were: Diphtheria 82; scarlet fever 56; measles 172; whooping cough 9; typhoid fever 2; tuberculosis 63.

Included in the above were the following cases of non-residents: diphtheria 14; scarlet fever 22; measles 5; typhoid fever 2; tuberculosis 5.

Total deaths from these diseases were: diphtheria 1; scarlet fever 3; measles 1; whooping cough 1; tuberculosis 31.

Included in the above were the following deaths of non-residents: scarlet fever 1; tuberculosis 5.

DIPHTHERIA AT LONG WHARF.—The physicians of the United States Public Health Service state that the epidemic of diphtheria which threatened the immigrants detained at the station at Long Wharf, Boston, is under control. More than 225 cultures have been examined and found to be negative. Officials of the station are considerably alarmed over the recent frequent outbreak of diphtheria at the detention quarters and express much apprehension over ability to combat with a serious epidemic in the unsanitary quarters should it get out of control.

NURSES' CLUB HOUSE.—The Massachusetts Nurses' Club is starting a fund to build a clubhouse costing \$400,000, and providing accommodations for three hundred nurses. Rapid increases in the number of nurses in the Metropolitan District and the difficulties of their securing suitable accommodation when not on a case, served to bring about the plans for such an establishment. The entire enterprise will be conducted by women nurses and will be solely for the benefit of nurses. The following are on the committee of arrangements:

Mary M. Riddle, R. N., chairman, superintendent of nurses in the Newton Hospital; Emma M. Nichols, R. N., treasurer, superintendent of nurses at the Boston City Hospital; Adelaide E. Turner, R. N., secretary, registrar of the Central Directory for Nurses; Sara E. Parsons, R. N., superintendent of nurses at the Massachusetts General Hospital; Alice H. Flash, R. N., superintendent of nurses, Massachusetts Homeopathic Hospital, and Carry M. Hall, R. N., superintendent of nurses at the Peter Bent Brigham Hospital. The club has 600 members and is just starting on its sixth year.

The building planned is a six-story, fireproof structure with restaurant, cafeteria, offices, and shops on the street floor. There will be a hall seating 1500 persons. It is expected that the clubhouse will not only become self-supporting, but pay a reasonable rate to its financial supporters.

LECTURE SERVICE OF THE STATE DEPARTMENT OF HEALTH. The State Department of Health of Massachusetts reports that during the year ending November 30, 1916, twenty-three persons connected with the department gave 628 lectures in 183 towns, the total attendance aggregating approximately 100,000. These lectures, in many instances, were illustrated with lantern slides relating to various health subjects. The Department also has several moving-picture films which are available for exhibition in connection with health weeks or health exhibits. "Bringing it Home" relates to infant welfare and the public health nurse; "The Great Truth," "The Temple of Moloch" and "The Price of Human Lives" relate to tuberculosis; "The Price of Thoughtlessness" to preventable accidents; and "Fly Danger" shows how flies breed and spread infection.

THE CHILDREN'S HOSPITAL.—The forty-eighth annual report of the Children's Hospital for the year ended Dec. 31, 1916, states that during that time it has cared for 3,388 patients in the wards, performed 2,469 operations, 1,253 being on the throat, and treated 9,283 patients in the out-patient department. The social service department has cared for 1,346 new cases. The service that the hospital is rendering in the care of infantile paralysis patients is worthy of note. In September the hospital was requested by the Commission on After-Care of Infantile Paralysis in New York City to loan its director of physical therapeutics to New York to instruct New York nurses in the muscle reëducation of these cases, which is the most important part of the modern treatment. This course was given for three months in New York. Meanwhile the nurses for the New York work were sent to Boston by the New York State Department of Health and were instructed here, partly at the Children's Hospital. In November the hospital offered a course in muscle training in the after-care of infantile paralysis which was taken by ten women from various parts of the country who came here and remained ten weeks, working while at the hospital, and the fees derived from this course have been, for the most part, utilized for the maintenance of the clinic. The out-patient treatment of infantile paralysis was found to be more efficacious if conducted apart from the regular out-patient department, and an anonymous contribution of \$6000 was received for the maintenance of this clinic. The Commission on Infantile Paralysis of the Harvard Medical School, acting agent of the State Department of Health of Massachusetts, has made this department of the hospital its central clinic. It is held at the hospital three mornings a week, and at intervals of a week or so the entire personnel of the clinic is transported to some city or town in the state where patients who are not easily able to come to Boston are examined in consultation with their doctors, and treatment prescribed. The

hospital, therefore, in this service has broadened its influence beyond its own community and has made important affiliations both with the Medical School and the State Department of Health. Such expansion has been a serious matter financially for the hospital, but it is an obligation which the managers have taken on in the confident hope that they will receive adequate support from the community.

BABY WEEK CAMPAIGNS.—The Federal Children's Bureau reports that plans are being made in thirty-four states and five hundred and two communities to hold a Baby Week. In most of these communities the time chosen is the first week in May. California, Massachusetts and some communities in Pennsylvania will hold Baby Week before that time. Several state committees have selected some one phase of infant welfare work for special emphasis in this year's campaign. In Washington, Illinois, Iowa, New Hampshire and Ohio the importance of complete birth records is being emphasized. The Delaware campaign is to be devoted to the prevention of infantile paralysis. North Dakota calls attention to the needs of children under school age. Kansas, which held the record among all the states for the largest number of local Baby Weeks in 1916, is emphasizing three needs in this year's plans: complete birth registration throughout the state, instruction of mothers in the principles of baby care; and better understanding of the care that expectant mothers ought to have.

Leaders in the baby campaign in Massachusetts and the Boston Federation of Women's Clubs have adopted "Babies Well and Happy" as their slogan. The campaign will be held throughout the month of April. Dr. Agnes C. Victor will have charge of the Boston campaign and Dr. Evangeline W. Young will conduct the state campaign. The opening day will be April 2d and an all-day meeting will be held at the Boston Public Library. The following subjects will be especially emphasized; the importance of complete birth registration; pre-natal care, care of the baby, and the organization of the Massachusetts Girls' Health League.

NEW ENGLAND NOTES.

CONNECTICUT.—At the annual meeting of the New London County Medical Association held in Norwich, April 5, Dr. Paul P. Swett, orthopedic physician of Hartford, Conn., read a paper on Sciatica.

Plans are being figured for a hospital building for the Norwalk Hospital Association, in South Norwalk, which will contain 60 private rooms, wards, operating room, etc.

MAINE.—Fire destroyed the Harlow building at the State Hospital for the Insane in Augusta, March 22, but all patients were saved and cared

for in new quarters. An act appropriating \$60,000 for the rebuilding is being pushed so that there will be as little delay as possible in the progress.

Dr. Eugene C. Fogg and Dr. H. P. Merrill, both of Portland, are to take the preliminary examinations that will qualify them for the rank of assistant surgeons in the United States Navy Reserve Corps.

NEW HAMPSHIRE.—The New Hampshire Chapter of the Red Cross is active in endeavoring to establish and maintain permanent headquarters in the State.

RHODE ISLAND.—An amendment to the General Laws of the Practice of Medicine has been proposed, which provides that the State Board of Health shall prepare a list of the medical schools whose graduates will be acceptable to the board, and also a statement and schedule of the subjects in which applicants are to be examined. This list and schedule are to be in force for a period of 12 months after it is placed on record. All applicants who pay their fee for examination are to be examined, and a record made of their examination and the decision of the board thereon, also in case of refusal of registration, the reason for such refusal. Such record is to be open to the inspection of the applicant examined, or his duly appointed secretary.

The executive committee of the Providence Chapter of the Red Cross is rushing its plans for the establishment of the Naval Base Hospital in that city. Of the necessary \$25,000 for the purpose, \$7,600 has already been promised.

VERMONT.—A bill introduced into the House of Representatives recently, designed to bar physicians coming from foreign countries from practicing in the state, was killed in that assembly. It was pointed out that a similar law is in effect in Canada.

Members of the Vermont Committee of American Physicians for Medical Preparedness, met on March 16 to discuss plans in case of national emergency. It was voted to take an inventory of all hospitals in the state to determine their facilities for caring for patients and other equipments, and to list physicians who do special work, such as surgeons, eye and ear men, etc., and to find out all those who are able and willing to serve with the Medical Reserve Corps. A committee of doctors of Franklin County are planning to organize the medical men of the county into a branch of this body.

Dr. Herbert W. Taylor, first assistant physician of the Brattleboro Retreat and assistant surgeon of the First Vermont Regiment has been summoned to duty.

Ninety-one cases of measles have been quarantined in Brattleboro, where there have also been numerous cases of chicken pox, whooping cough and mumps.

Obituary.

THOMAS BERNARD SHEA, M.D.

DR. THOMAS BERNARD SHEA, deputy health commissioner of the City of Boston, died at his home on March 25. Dr. Shea was born in 1859 and received his early education at the Brimmer School and Boston Latin School. He graduated from Holy Cross College, receiving his bachelor of arts degree in 1884, and his master of arts degree in 1887. In the same year he graduated from the Harvard Medical School. He then became assistant resident physician of Long and Rainsford islands, later becoming assistant port physician and medical inspector, and in May, 1904, was appointed to the position of health commissioner. In July, 1906, he resigned to become chief medical inspector and later deputy commissioner of health of the City of Boston, which position he held at the time of his death. He was widely known for his achievements in small-pox control, especially during the epidemic of 1902. During the past summer he was indefatigable in efforts to control the poliomyelitis epidemic in Boston.

Dr. Shea was a member of the National Association for the Relief and Control of Tuberculosis, the American Public Health Association, the Massachusetts Association of Boards of Health, the Massachusetts Medical Society, and the American Social Science Association. He is survived by one brother and one sister.

JOSEPH F. O'SHEA, M.D.

DR. JOSEPH F. O'SHEA, city physician of Lynn, Mass., died at his home on March 29. Dr. O'Shea was born in Ireland in 1863 and came to this country when very young. He studied in the Lynn public schools, in Villa Nova College, Pennsylvania, New York Medical College, Columbia University, Bellevue Medical College and in Berlin.

After he had completed his studies he returned to Lynn, and in 1886 served as house officer in the Lynn Hospital. The next year he was appointed a member of the staff and retained that connection up to the time of his death.

For the past seven years he had been city physician and associate medical examiner. Dr. O'Shea was a member of the Massachusetts Medical Society and was at one time president of the Essex District Medical Society.

He was greatly beloved by patients and friends and admired for his efficient and pains-

taking discharge of his official duties. His skill as a practitioner made him well and favorably known among all who came in contact with him and his winning personality endeared him to the hearts of hundreds of patients and friends.

WARREN WILBUR PILLSBURY, M.D.

DR. WARREN WILBUR PILLSBURY of Newburyport, died there April 1, 1917, after a long illness, aged 69 years. He was a native of Manchester, N. H., and was graduated from the Medical School of Maine in 1873 and settled in Newburyport the following year, at that time joining the Massachusetts Medical Society. He was vice-president of the Essex North District Medical Society in 1908-1909, and president in 1910-1911. He was a member of the staff of the Anna Jacques Hospital and served on the school board. A widow and three daughters survive him.

Miscellany.

NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR.

THE Bureau of Welfare of School Children has recently issued the following memorandum in support of the 1917 budget estimates of the Department of Health for health supervision of school children.

The 1917 budget estimate of the Bureau of Child Hygiene of the Health Department calls for \$75,240 more than last year for school health work. The additional money is needed for enlarging the staff of medical inspectors and nurses so as to reduce the present proportion in the number of children to physician and nurse to a better working basis. Six dental hygienists are also asked for, who are to be engaged in prophylactic work and giving surface treatment, thereby adding considerably to the preventive as well as curative services at present available in the schools and clinics. The following table shows the present and proposed staffs:

	1916	1917	INCREASE
Medical Inspectors	100	125	25
School Nurses	200	252	52
Dental Hygienists		6	6

HEALTH CONDITIONS AMONG SCHOOL CHILDREN ARE TOO SERIOUS TO BE NEGLECTED.

The 1915 reports on medical inspection show that out of over 925,000 pupils enrolled in the public and parochial schools, only 305,665, or 33%, were examined for physical defects, leaving a large percentage among the two-thirds of the enrolled children not examined possibly suf-

fering from various physical defects, which in their very nature are a handicap to school progress. Of the children examined, 222,072, or 72.6%, had physical defects requiring treatment as follows: defective vision, 14.5%; defective nasal breathing, 9.5%; hypertrophied tonsils, 11.2%; defective nutrition, 5.3%; defective teeth, 63.9%; and to a lesser extent there were cases of cardiac and pulmonary diseases, defective hearing and orthopedic defects.

The large number to be examined and the small staff of physicians available made it impossible at times to give each child a complete physical examination, with the result that 129,125, or 42.2%, of the children examined did not have their vision tested.

The large percentage of undetermined cases under treatment or investigation proves the insufficiency of the staff employed for this vast and important task. As much of the curative work done by private physicians or at clinics is due largely to the follow-up efforts of the school nurses, this phase of the health supervision cannot be conducted as effectively as desired unless an adequate staff of nurses is provided.

Both these handicaps in the results of the year's work are due to the large number of pupils assigned to each physician and nurse, being respectively 9200 and 4800, whereas the ratio should never exceed 3000 in either case. The appointment of the additional physicians and nurses asked for will reduce but slightly this ratio.

RATIO OF PUPILS TO PHYSICIANS AND NURSES.

	1916	1917
Pupils to physician	9,200	7,400
Pupils to nurse	4,800	3,666

Public safety demands the quick recognition and exclusion from school of all cases of infectious disease. The health and efficiency of each individual child demand the discovery of any physical defects which may have a deleterious effect, not only on his well-being, but also on his educational progress. Without the proper number of physicians and nurses indicated above, neither of these important requisites can be observed. The welfare of the community as well as the interests of our educational and health systems are sufficient grounds on which to urge the granting of the increased appropriation asked by the Health Department.

MORE MEDICAL INSPECTORS NEEDED.

Under the Education Law of the State of New York, the employment of physicians to examine each public school child *each year* is made mandatory outside of New York City. Under the present system in New York City each child is examined but *once in three years* during its school life. The cities of Boston and Philadelphia, where social and economic conditions affecting school children are analogous to those

in New York, are governed by the laws of the states of Massachusetts and Pennsylvania, respectively, which make annual examinations of school children mandatory. Similar statutory provisions are in force in the states of Maine, Minnesota, North Dakota, Rhode Island, Utah and West Virginia. If we cannot insure the annual examination of each child attending school in New York City and the effective following-up of each case found needing medical attention, the city should at least provide for the thorough examination and following-up of a larger percentage of children than it is at present possible to reach.

ADDITIONAL NURSES NECESSARY.

The school nurse plays a highly important part in our school health supervision. Her duties are many and extend beyond the school building. The efforts of the medical inspectors would be of little avail without the following-up of the cases by the nurses. Upon the school nurse devolves the highly important duty of examining the children for contagious diseases. This work consumes a great part of the nurse's time, and is in its very nature a very exacting procedure. Adding to this the follow-up work with its many home visits, taking children to dispensaries for treatment, and the numerous cases requiring emergency treatment which turn up daily in every school, it will readily be seen that the present staff of nurses is insufficient and that the individual nurse is overtaxed.

The number of children cured of serious physical defects thus depends largely on the number of parents receiving the advice and aid of the school nurse. This activity is necessarily limited by reason of the small number of nurses assigned to this work, with the result that large numbers of cases are never reached, often with very serious consequences.

DENTAL HYGIENISTS FOR PREVENTIVE WORK.

For the first time in the existence of the system of medical inspection in New York City, funds are requested for the employment of dental hygienists. The experience of Bridgeport, Connecticut, and other cities employing dental hygienists has demonstrated the great value of their services, as well as the considerable economy effected thereby. Instruction in the care of the teeth, which at present is an added burden to the many other duties of the school nurses, and the cleaning of children's teeth, which is seldom done in the clinics, can be done expeditiously and satisfactorily by dental hygienists, specially trained in these branches of dental practice. The large percentage (63.9%) of children with defective teeth in the public schools, and also the fact that more than half of these children are probably too poor to patronize private dentists, offer the most convincing proofs of the need for such prophylactic treatment being made easily and continuously available to the children in our schools.

Correspondence.

LETTER FROM CHAIRMAN OF MASSACHUSETTS HEALTH INSURANCE COMMITTEE TO PRESIDENT OF THE MASSACHUSETTS MEDICAL SOCIETY.

March 25, 1917.

Dear Dr. Woodward:

I am writing to you with the desire to promote co-operation and to correct what I think must be a very definite misunderstanding in regard to the Committee on Health Insurance, of which I am chairman. In the first place, in order that the purpose of this committee, and particularly the position of those who, at my invitation, have become members of it, may not be misinterpreted, I wish to make it quite clear that I myself accepted the chairmanship of the committee on the express stipulation that it did not involve supporting the Young bill or any other particular piece of legislation that might come up, as, while I am in favor of the general principle of health insurance, I have felt and still feel that it is undesirable that legislation in favor of it be enacted this year at any rate. I myself wrote all the letters inviting people to join the committee, and I think it is due to them to say that a very considerable proportion of them accepted membership on account of my very clear statement in the letter that the members were entirely free to oppose, take no action on, or to support, individually, any legislation now or in future, but that the committee as such would not, without general consent of its members, at any time support any particular legislation, and would not this year support as a body the bill before the Legislature, though some members of the committee would do so. I have, therefore, some responsibility toward the members of the committee, especially toward those who seemed at the meeting of the full committee to be in the majority, and who did not favor the passage of the Young bill, and I am writing you partly because I understand that it is believed by many persons, and particularly by some of the members of the committee of the Medical Society that my committee is advocating immediate legislation. It is definitely not doing this as a body, though some of its members are. The committee, on the contrary, is established for the purpose of studying the question and attempting to influence wisely, if it can, the legislation that a large proportion of the committee consider is exceedingly likely to come very soon and that we hope will, if carried out, be done in the light of more knowledge than we now possess regarding certain matters of much importance relating to it. We have at present, and anticipate that we shall have throughout the coming year, a paid secretary giving a large part of his time to investigative work. He is at present working on such questions as the probable cost of health insurance to the State, the employer and the employee, the financial bearing it is likely to have upon physicians and upon established medical charities, the amount of sickness there is in the State that would come under such a system, so far as this can be approximated, the cost to the State, to municipalities, and to private charity of the present methods of caring for sickness, and how far health insurance would relieve this cost, and some similar questions.

I have hoped that, since there is a great deal to be done to get the information necessary to answer these questions with some accuracy (and all such information is very desirable for wise action for or against the principle if the general interests of the public are to be safeguarded before future Legislatures), my committee might work in very friendly and cordial cooperation with the committee of the Massachusetts Medical Society. Of course we have, on the whole, a more favorable attitude toward

the principle than some of the members of your committee who are very much opposed to it, but, nevertheless, we are all after facts, and we certainly, neither of us, desire to distort them, and I hope that we can work together and, so far as possible, share each other's facts in order that we may both work toward the enlightenment of each other and the public at large.

With very kind regards, I am,

Faithfully yours,

DAVID L. EDSALL,

80 Marlborough Street, Boston.

INFANTILE PARALYSIS IN 1917.

North Abington, Mass., April 7, 1917.

Mr. Editor:

In the issue of the BOSTON MEDICAL AND SURGICAL JOURNAL of March 29, 1917, under Medical Notes, I read, "Infantile Paralysis in Whitman," and it says that it is the first case appearing in the Old Colony District this winter. I had a case of infantile paralysis which occurred on Jan. 7, 1917, and was sent to the Brookline Contagious Hospital the next day, where she died on Jan. 9.

Respectfully yours,

RICHARD B. RAND, M.D.

MARRIAGES.

DR. MERRETT LA COUNT JONES, of WAUSAU, Wis., a graduate from Harvard Medical School, Class of 1915, was married on March 24, to Miss Grace Hayward Ivers, of Cambridge.

APPOINTMENTS.

DR. GEORGE W. GALE has been reappointed medical examiner in Saguenay.

DR. E. R. MARSHALL, of Providence, R. I., formerly in charge of the local office of the Federal Health Service in that city, has received an appointment at Ellis Island, N. Y. He is succeeded by Dr. Dana E. Robertson.

DR. GEORGE W. GOODE of Brookline has been appointed visiting physician to the Out-Patient Department of the Middlesex Hospital in Cambridge.

DR. TIMOTHY LEARY has been reappointed Medical Examiner for Suffolk County.

DR. JOHN FRANCIS CREMENS, of Cambridge, has been appointed assistant surgeon in the navy, with the rank of Lieutenant. Dr. Cremens graduated from Georgetown University in 1915.

DR. J. J. GOODWIN of Clinton has been made first Lieutenant in the medical corps of the United States Army.

DR. H. D. HANDY of Harwich has received a re-appointment as medical examiner for Barnstable County, first district.

DR. P. A. GRADY has been appointed town physician of Clinton, Mass.

DR. WILLIAM E. CURTIN of North Plymouth has been appointed as medical inspector of Company D, Fifth Regiment, M. N. G.

DR. DAVID D. BROUGH has been appointed deputy health commissioner, to take the place of Dr. Thomas B. Shea, recently deceased. Dr. Brough has been medical inspector of Boston Health Department for twenty years, and was a valued assistant of Dr. Shea.

SOCIETY NOTICES.

WORCESTER DISTRICT MEDICAL SOCIETY.—The regular meeting will be held Wednesday, April 11, 1917, at 4.15 p.m. in G. A. R. Hall, 55 Pearl Street, Worcester, Mass.

At the request of the Standing Committee on Control of Cancer of the Massachusetts Medical Society, Dr. Fred B. Lund, of Boston, will address the Society on "The Early Manifestations of Cancer."

After the discussion of the paper there will be an opportunity for an open discussion upon "Our duty to the country in the present crisis."

The censors meet for examination of candidates for admission at 2 p.m., Thursday, May 10, 1917, at Worcester Public Library (Reference Department). Candidates should make applications on blanks to be had of the secretary at least one week prior to that date.

ERNEST L. HUNT, Secretary.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY AND BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY.—A combined meeting of these societies will be held on Thursday evening, April 12, at 8 p.m., at the Boston Medical Library, 8 The Fenway:

Papers:

"The Neurological Aspects of Syphilis of the Eye." Dr. Joseph Collins, New York.

"The Treatment of Syphilitic Affections of the Central Nervous System, with Special Reference to the Visual Pathways." Dr. Mark J. Schoenberg, New York.

Discussion opened by Drs. J. B. Ayer, P. C. Knapp, and Abner Post.

W. HOLBROOK LOWELL.

JAMES B. AYER,

Secretaries.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—The Annual Meeting of the Society will be held at the Quincy House, Boston, on Wednesday, April 18, 1917, at 11.00 a.m. The annual oration will be delivered at 12.00 o'clock, noon, by Dr. Frank R. Stubbs of Newton. Subject, "Clinical Experience with Cases of So-called Acidosis."

Dinner will be served at 1.00 p.m.

LYMAN S. HARGOOD, Secretary.

RECENT DEATHS.

CHARLES S. BRADDOCK, JR., M.D., known for his work as chief medical inspector of Siam and a leading expert on cholera and smallpox, died on, March 23, at his home in Haddonfield, N. J. He had, of late years, served as medical examiner for the Interborough Rapid Transit Company. In 1901, Dr. Braddock accepted the offer of Dr. Adamson of Bangkok, to become his assistant and served in that capacity a year. During that time he took a prominent part in the Governments campaign against smallpox, cholera and bubonic plague. Dr. Braddock was appointed chief medical inspector of the Royal Siamese Government, and in that capacity travelled all over the kingdom in his fight for sanitation and against disease. Cholera was then depopulating the country. Dr. Braddock burned village after village, and established the first isolation camp ever known. He stamped out the plague. For his services the late King Chulalongkorn awarded him a diamond-studded medal. Dr. Braddock's most notable achievement was the perfection of a smallpox vaccine virus for use in the tropics, intended to withstand intense heat.

CAROLINE ROOT CONKEY, M.D., who died on February 24, at the Watbury Hospital, Watbury, Conn., from Bright's disease, was born in Enfield, Mass., July 8, 1844. She was graduated from the Woman's Medical College of the New York Infirmary in 1881, after which she moved to Watertown, N. Y., where she practised several years, moving to Watbury, Conn., in 1887. She was connected with the Watbury Hospital since its opening in 1880. She is survived by a sister.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

April 19, 1917

THERAPEUTIC AND PREVENTIVE MEDICINE.		EDITORIALS.	
THE TREATMENT OF PERNICIOUS ANEMIA. <i>By Ralph C. Larrabee, M.D., Boston</i>	553	VACANCIES IN THE MEDICAL CORPS OF THE UNITED STATES ARMY.	578
ORIGINAL ARTICLES.		THE RÔLE OF STATE SANATORIA, COUNTY TUBERCULOSIS HOSPITALS AND MUNICIPAL TUBERCULOSIS HOSPITALS IN MASSACHUSETTS.	578
RETROVERSION OF THE UTERUS: ITS ETIOLOGY AND RATIONAL TREATMENT. <i>By John T. Williams, M.D., F.A.C.S., Boston</i>	558	A DESIRABLE SURGICAL RESEARCH MEASURE	579
A POINT SCALE FOR THE MEASUREMENT OF INTELLIGENCE IN ADOLESCENCE AND ADULT INDIVIDUALS. <i>By Robert M. Yerkes, Ph.D., Boston, and Cecilio S. Rossy, M.A., New York</i>	564	REGISTRATION OF PHYSICIANS	579
ADDRESS.		MEDICAL NOTES	580
THE TRAINED NURSE. <i>By Gaston Torrance, M.D., Birmingham, Ala.</i>	573	CORRESPONDENCE.	
MEDICAL PROGRESS.		REEXAMINATION OF TUBERCULATES. <i>John B. Hawes, 2d</i>	585
RECENT PROGRESS IN PSYCHIATRY. <i>By Henry R. Stedman, M.D., Brookline, Mass.</i>	574	MISCELLANY.	
BOOK REVIEW.		INFORMATION REGARDING THE CORRELATED ACTIVITIES OF THE COUNCIL OF NATIONAL DEFENSE AND THE ADVISORY COMMISSION, THE MEDICAL DEPARTMENTS OF GOVERNMENT AND THE COMMITTEE OF AMERICAN PHYSICIANS FOR MEDICAL PREPAREDNESS.	582
THE TREATMENT OF DIABETES MELLITUS. <i>By Elliott P. Joslin, M.D.</i>	577	NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.	586

Therapeutic and Preventive Medicine.

THE TREATMENT OF PERNICIOUS ANEMIA.

By RALPH C. LARRABEE, M.D., BOSTON.

Two facts make it difficult to judge the value of any given method of treatment in pernicious anemia; first, the indefiniteness of the diagnosis and, second, the tendency of the disease to undergo remissions.

Taking up the first of these points;—there should be no particular difficulty in recognizing the characteristic blood-picture. Atypical findings are probably no commoner than are borderline diagnoses in other conditions. Nevertheless there seems to be a certain amount of confusion as to the points of difference between the blood of pernicious anemia and that of the benign or secondary forms, and any reported series of cases will stand close inspection in this regard. Difficulty also arises from the fact that the blood-picture is not pathognomonic. It is well known that infection with *Bothriocephalus latus* may give rise to an anemia not distinguishable hematologically from the ordinary cryptogenetic "pernicious" form. I have seen one such case in Boston. I have seen the pernicious blood-picture in syphilis, in cirrhosis of the liver, in lead-poisoning and in a small cancer of the intestine. A very suggestive picture is sometimes found a few days after a severe hemorrhage. This occurs frequently enough to demand that before the diagnosis of pernicious anemia is definitely made,

every case should be thoroughly studied for evidences of a causative condition. The Wassermann reaction should always be done and the stools should be examined microscopically for parasites and chemically for blood. Never make the diagnosis on the blood alone. The only chance of permanent relief in apparent pernicious anemia is the discovery of a remediable cause.

The second fact which renders difficult an estimation of the value of treatment in this disease is its proneness to undergo remissions—periods during which the patient is much relieved, or even apparently well. This fact is perfectly well known to all students of the disease and yet we see, again and again, cases reported as "apparently cured" or even as "cured" without qualification, two or three months after some new method of treatment. As remissions lasting over a year are common under any form of treatment, the absurdity of such words is obvious.

If we have in mind less radical results than permanent cure we can estimate the value of treatment on the basis of its efficacy in bringing about remissions. If a given line of treatment will bring about remissions in a strikingly large proportion of cases, or if remissions so produced are strikingly long, it has justified itself.

In order that new methods may be based on these criteria, we must know the frequency and duration of spontaneous remissions or of those occurring under old and conservative medical methods. Cabot¹ has studied 1200 cases, amongst which there was a history of remissions in about three-fourths (77%) of those where the

data were sufficient for judgment. As to the duration of these remissions, there were more cases in the nine months to one year group than in any other, though the average would appear to be about seven months.

My own experience is probably in no way exceptional. Excluding those of doubtful diagnosis, I have seen 69 cases, concerning which my notes are adequate in 52. Thirty-six (69%) of the latter had one or more periods of marked improvement in symptoms, with a rise in hemoglobin of 25% or more.

The duration of the remissions in 28 instances where my notes are complete, from the beginning of the remission to the relapse which ended it, averaged 9 months. There are 4 cases still in remissions, which have lasted 5, 7, 40, and 47 months respectively, averaging 25 months. If these are included in the above figures it will be seen that the average rises to 11 months. Several cases drifted out of sight while in remissions, which is, of course, more apt to happen in cases with long remissions than in those with short ones. Hence, the average duration of the remission in these cases will probably be little less than a year.

Three cases, still living in prolonged remissions, deserve special mention in comparing these results with those of newer methods of treatment.

J. F., on July 31, 1913, had 869,000 red corpuscles, hemoglobin 30 per cent., volume index 1.24, a few megaloblasts. On October 20, 1913, the hemoglobin was 90 per cent. There has been no relapse to date, 3 years, 4 months, from the beginning of the remission.

M. E. D., on January 27, 1913, had 672,000 red cells, hemoglobin 20 per cent., volume index 1.8, very numerous blasts, mostly megaloblasts. Improvement began soon after and has persisted to date, almost 4 years.

M. W. H. has been followed since May 2, 1908, when he had 1,914,000 red corpuscles, 45 per cent. of hemoglobin, a volume index of 1.13, and a moderate number of blasts, mostly megaloblasts. A remission began at once and lasted 2½ years, when he had a brief relapse, followed by a second remission. Another relapse occurred in the summer of 1911, followed by a remission which still persists,—5½ years. This approaches the limit of six years set by Cabot as the criterion of permanent recovery, and I have therefore omitted the case in estimating the average duration of remissions.

Of Cabot's 1200 collected cases, there were in 1908, six that had remained well for this period. In 1915 this figure had dropped to three, yet Cabot continues, in precisely the same words, to consider that a remission of 6 years indicates permanent recovery!

It is safe to say, then, that pernicious anemia, treated by old-fashioned medical methods, will show remissions in two-thirds of the cases, and that their average duration will be about a year. Any new line of treatment that fails to give such results is no improvement on the older, conservative methods.

ARSENIC.

The use of arsenic in pernicious anemia is at a disadvantage in comparison with such methods as transfusion and splenectomy because it is so old that its limitations are thoroughly understood. A certain efficacy is generally admitted. Many patients promptly improve under its use and it helps in bringing about remissions. Of course, relapses, ultimately fatal, practically always occur. Its method of action is not clear. The older theory of marrow stimulation seems to be giving way to the view, advanced by Gunn and Feltham², that it makes the red corpuscles more resistant to hemolytic agencies. That the addition of minute amounts of arsenic to suspensions of blood corpuscles makes them more resistant to hypotonic salt solutions is doubtless true. Hill³ has demonstrated that injections of salvarsan have a definite inhibitory action on hemolysis by hypotonic salt solutions. These experiments are, of course, highly artificial and it is unsafe to conclude that arsenic increases the resistance to the destructive agencies of pernicious anemia. So far as I am aware, the influence of arsenic on urobilin excretion has not been demonstrated.

As to methods of administration, the continuous use of Fowler's solution of potassium arsenite by mouth in slowly increasing doses is doubtless the favorite. After this solution has once been pushed to the point of intolerance, it is often hard to resume it subsequently. Under these conditions, the official solution of sodium arsenate, which differs from Fowler's solution chiefly in not containing lavender, is usually better tolerated. I have never seen a patient unable to take arsenic by mouth. If such cases arise it may be given subcutaneously in several forms.

Salvarsan has been used with varying results. Bramhall⁴ and Boggs⁵ have each reported series of cases in which its use was followed by prompt remission. Others have failed to get favorable results. Where the pernicious blood-picture is a manifestation of syphilis, even if the diagnosis is made exclusively on the Wassermann reaction, salvarsan may, and probably should, be used. But in ordinary, non-syphilitic cases, there is no reason to suppose that pernicious anemia is dependent upon an organism capable of destruction by arsenic. We wish to influence metabolism, or to protect certain cells. In either case, sustained action is wanted, not a maximum bactericidal effect. Hence it would seem that in ordinary cases, the older methods of continuous administration by mouth are to be preferred—at least on theoretical grounds. Bramhall⁴ prefers the intramuscular administration of salvarsan rather than the intravenous method for this reason. From my own quite limited experience, I agree with him that the reactions following salvarsan are likely to be more severe than in syphilis.

Iron is not as a rule indicated in pernicious anemia. The tissues are commonly loaded with

iron-bearing pigment and it is hard to believe that the addition of a few grains more can possibly be helpful. Yet there are exceptions. Sometimes when the anemia is rapidly improving there is a halt in the increase in hemoglobin, the red cells continuing to rise. The color index falls and the blood-picture approaches that of benign anemia. I have in mind one young woman in this condition where the administration of ferrous carbonate was followed by a prompt rise in hemoglobin.

DIET.

Opinions as to the importance of dietetic measures in pernicious anemia vary greatly, as the most cursory study of the literature will show. On the whole, the attitude of the best clinicians is skeptical and their experience discouraging.

There has long been a suspicion that the toxic substance that destroys the red corpuscles is formed in the intestine, probably as a result of the putrefaction of proteins. There is evidence that such putrefaction may be increased in pernicious anemia⁶, and bodies have actually been isolated from nitrogenous material undergoing putrefaction like that occurring in the bowel, which cause a suggestive type of anemia when injected into animals⁷. Of course, the intestinal canal contains poisonous protein substances, as well as substances capable of becoming so after sensitization⁸. But the body is ordinarily amply protected against them. It is a long way from the demonstration that hemolytic substances exist in the bowel to the proof that these substances are actually the cause of the hemolysis in pernicious anemia.

In addition to the above considerations, there are several facts which seem to show that conditions in the alimentary tract have important relationships to the disease. Histologic changes in the buccal, gastric and intestinal mucosa have long been recognized. The resulting achylia gastrica is perhaps not the only respect in which the digestive secretions are impaired. Nearly all patients have digestive disturbances, sometimes of alarming severity and persistence. Attacks of diarrhoea or vomiting often precede or accompany the sudden characteristic changes in the degree of anemia. Schmidt,⁹ who is a student of intestinal diseases rather than a hematologist, notes that disorders of intestinal digestion often precede by many years the development of pernicious anemia, and that more or less anemia is frequently present in all forms of chronic intestinal dyspepsia. In spite of statement in the text-books to the contrary, many patients show marked evidences of mal-nutrition. Cabot's¹⁰ figures show that there is considerable loss of flesh in about 40%. These facts would seem to warrant careful consideration of the alimentary tract.

In planning the diet, then, one must bear in

mind three factors;—the excessive putrefaction of proteins, the occurrence of intestinal indigestion, and the frequency of mal-nutrition.

The first indication is met by limiting the protein intake to about 60 or 70 grammes daily. I usually give part of the protein in the form of buttermilk—not only for the rather problematical value of the lactic acid bacilli in limiting the growth of putrefactive organisms, but also because the casein in buttermilk is already coagulated in a fine and easily digested curd. Remembering the fact that gastric achylia is the rule, meat, if it is given, must be fresh, well cooked and finely chewed, or if the teeth are in bad condition, finely chopped. It must be tender and free from connective tissue, the latter being digested only in the stomach, and only in the presence of hydrochloric acid. The diet should not contain much indigestible residue. I always give hydrochloric acid in full doses, as well as bitters and stomachics, and I allow a judicious use of spices, sauces and appetizers.

The intestinal indigestion is best met by the use of a rationally balanced diet and the avoidance of substances which leave a considerable residue. I have attempted in some cases to follow the indications given by frequent examinations of the stools after the Schmidt test-diet, but the information thus obtained has not been valuable.

In carrying out these restrictive methods, one must remember the tendency to mal-nutrition and avoid too great stringency. Hard and fast rules should not be laid down. It is often better to make the directions as general as possible, even at the risk of indefiniteness. Let the patient follow his own desires so far as possible, but have careful daily records of the food made. These diets can be analyzed approximately, with especial attention to the proteins and total caloric value, and any excesses or deficiencies remedied. The diet-charts devised by Dr. Arnold¹¹, will be found useful in this connection. His methods for the approximate regulation of proteins, though designed primarily for nephritics, will, when once mastered by the patient, enable him to satisfy his natural taste for variety while keeping the quantitative adjustments near enough the desired point for all practical purposes. One must individualize, however, and there are cases in which all restrictions must be cast aside in the effort to get in enough food.

Gravitz¹² and others advise regular lavage of the stomach and colon. My patients, however, will seldom tolerate continuous stomach washing and I have never been able to carry it out regularly. Colonic lavage is more successful, and daily, copious, high enemas have seemed to me, in several instances, to be the measure which has finally arrested a relapse and led to the establishment of a remission. Several cases have been reported by surgeons who have done cecostomy or appendicostomy, followed by through

and through washing, with excellent results. So far as I know, such operations have not been done in this community and late results are lacking.

I have no figures to offer showing the results of treatment along these lines. I can only say that some of the old feeling of helplessness in the presence of a patient who is losing ground day by day has been replaced by a certain sense of control. One of my patients was of the sort, so frequently seen, who followed advice faithfully only so long as he felt ill. As soon as he reached a certain stage of improvement, nothing would hold him to the paths of therapeutic righteousness. He continued his arsenic but forgot all else and disappeared from view. When he relapsed, he returned to the fold. No less than five times he was "apparently cured" by a brief course of dietetic regulation and colonic lavage. Finally, the inevitable relapse occurred which could not be controlled. Nothing can be claimed of these measures except that they help for a while in bringing about remissions.

GENERAL MANAGEMENT.

General hygienic management is of great importance. During relapses, especially when the anemia is on the increase, patients should be kept in bed, and should stay there until remission is well under way. If possible, they should not return to work even if the blood becomes in all respects normal. They should avoid overtaxing the strength in any way. They should not be advised to "take plenty of exercise in the open air." Out-door treatment as we advise it in convalescents from tuberculosis is not for them. They need fresh air, but do not stand cold well and should not be exposed to the full rigors of a New England winter. They should lead the "simple life," not the "strenuous life."

Emotional stress and strain is fully as undesirable as excess of physical activity. Emotional shock may not only be the precursor of a serious remission but, if one takes his histories carefully, he will find that the onset of the disease not infrequently dates from some shocking emotional experience—such, for example, as the death of a husband or wife or a business failure. In one case, a woman, previously in good health, was involved in a railroad accident and witnessed all its horrors. As a result of the mental shock, rather than any serious physical injury, she was confined to the bed and did not recover her color or strength. Some months later she was found to have pernicious anemia from which she ultimately died. Such investigations as those of Cannon¹³ on the physiology of the emotions and their effects on the ductless glands and other organs strengthens my view as to the part which emotional stress might play in determining the onset of an exacerbation or even in acting as an exciting cause in a susceptible person. For, of course, such cases as the one mentioned above must possess an unusual degree of susceptibility, or even have the disease

in an early or latent stage. Even in the case of a person already having the disease in a frankly advanced stage, we cannot say why or how emotional shock can have the least influence, any more than we can say why or how it can unfavorably influence cardiac disease or diabetes. But it surely does so, and we ought to guard the patient, so far as is possible, against such influences.

SPLENECTOMY.

At the present time, discussion of the treatment of pernicious anemia concerns largely the question of splenectomy. Although the word "hypersplenism" is frequently used in this connection, it is not to be supposed that the primary and sole site of the causative factor is the spleen. It is pretty generally admitted that some hemolytic agent or agency exists outside of the spleen, but that the spleen supplies some important cog in the machinery which destroys red corpuscles. Splenectomy is not presumed to eradicate the hemolytic agents, but only to remove one of the principal instruments with which they work¹⁴.

A perfectly clear explanation of how removal of the spleen leads to improvement is at present lacking. There can be no doubt that there is a decrease in the excessive destruction of red corpuscles upon which the anemia depends, for in successful cases, there is a corresponding decrease in the excessive excretion of urobilin, a derivative of bile pigment, which is, in turn, derived from hemoglobin^{15 16 17}. There is usually found also increased resistance of the red corpuscles to hemolysis by hypotonic salt solutions, though results are somewhat confusing, and too much importance should not be given to such highly artificial experiments as these^{18 19}. Some investigators find an increase in antihemolytic substances—neutral fats and cholesterin. There is, on the other hand, evidence of increased blood-formation, in the increase of nucleated and reticulated red cells, Howell-Folly bodies, platelets and leucocytes. These are presumed to indicate either that the operation stimulates the bone-marrow or that some inhibitory function of the spleen has been removed²⁰.

Eppinger¹⁵, who is largely responsible for the introduction of splenectomy in pernicious anemia, believes that the anemia is a direct result of structural changes in the smaller vessels of the spleen. The consequent obstruction to the passage of blood through certain portions of the capillary circulation causes the corpuscles to leave the capillary vessels in abnormal numbers and come into close contact with certain cells in the pulp, whose action results in their destruction. He thus compares splenectomy to the ligation of a continuously bleeding artery. Relapses after splenectomy are accounted for by the development of hemolymph nodes which take up the spleen's function. Presumably, they are subject to the same circulatory obstructive changes as the spleen itself—the result of the same generalized cause. Eppinger's theory is

based on Weidenreich's studies of the normal histology of the spleen. It is not, so far as I am aware, based upon definite microscopical findings in spleens from pernicious anemia subjects, and is to be regarded merely as a working hypothesis.

From clinical evidence it is safe to say that early improvement frequently follows splenectomy—perhaps more often than any other known therapeutic procedure. Giffin²¹ states that about four cases out of five will have remissions after splenectomy. Krumbhaar²² has collected 153 cases from the literature and finds that remissions occurred in about two out of three (64%). The results in the smaller series of Lee, Minot and Vincent²⁰ were about the same. While two cases out of three will have remissions under medical treatment, it must be remembered that this figure includes *all* remissions, spontaneous and induced, occurring at any time in the course of the disease, and there is probably no other method of treatment which will be promptly and definitely followed by improvement in anything like this proportion. On the other hand there is no evidence warranting the use of the word "cure" in this connection. The patients improve slowly after operation, the blood often showing less change than the general condition. But even though they become clinically well the blood-picture continues to be that of pernicious anemia.

As to the duration of remissions, Krumbhaar²² finds the results after splenectomy to compare favorably, in cases which survive operation, with Cabot's¹ figures for cases medically treated. When the post-operative deaths were included, however, the average duration of life was about the same. The operation is, of course, too young to permit such comparisons to be of much value at the present time. Probably some splenectomized patients will remain well for years, just as they have under medical treatment. Some of these will similarly be regarded by the optimistic as "cured" and by the pessimistic as examples of the fallibility of diagnosis. Nearly all may be expected after some months to relapse and die.

The operative mortality will probably be, in cases operated in remission, between 5 and 10%—not high even for a palliative operation. Unfavorable cases will, of course, give a much higher figure. Krumbhaar's 153 collected cases gave a mortality slightly below 20%, within six weeks of operation.

The evidence at present points to a limited value for splenectomy in pernicious anemia. On the one hand, if it is to be done as a last resort, when other means have failed, and the patient is in poor condition, the mortality will be high and the chances of benefit small. On the other hand, a palliative operation in a remission is an absurdity—unless, indeed, the remissions after splenectomy prove to be decidedly longer and more complete than those occurring under

medical treatment. I believe that splenectomy has its place in cases which have relapsed under medical treatment and where transfusion fails to initiate progressive, continued improvement, but does bring the patient temporarily up to a point where operation can be done with reasonable chances of success.

TRANSFUSION.

Transfusion has a perfectly definite place in the treatment of pernicious anemia. On theoretical grounds it might be expected to give a prompt increase in hemoglobin and red corpuscles, but considering the rapidity with which blood-cells are being destroyed, this improvement should be very brief. In other words, assume that in a given case the progress of the anemia is represented by a downward sloping line. Transfusion would produce a sharp up-curve, which, if the ratio of blood production to blood destruction remained unchanged, would be followed by a downward sloping line parallel to the original one. This seems to occur in some cases. In others, the balance between production and destruction is upset in a favorable way so that the line continues to slope upwards, approaching and even reaching the normal. In other words, transfusion may initiate a remission.

My own experience consists of but eight transfusions, in six patients. Three were done by the direct arm to arm method, and five by Kimpton's tubes²³. In two instances there was no benefit whatever, one apparently receiving little or no blood, and the other dying within a few days from pneumonia, present before operation. In one, the downward course was resumed in a few days. In three, there was no progressive remission after transfusion, but the immediate gain was maintained for five weeks, two months and three months respectively. In the remaining two, the immediate gain was followed by true progressive remissions, which in one lasted 11 months and in the other still persists after seven months.

It is today scarcely necessary to say that such methods as that of Kimpton²³ are greatly to be preferred to the older, direct, arm to arm anastomosis. Personally, I should not be willing to supply blood to a case of pernicious anemia by the latter method nor shall I ever again ask another person to do it. There is too much likelihood of sepsis and it is taking too many chances with the unknown etiology of the disease. Also if the most harrowing hour I ever spent means anything, it is not without danger to the donor. My last five transfusions were done by Dr. Kimpton without the slightest ill effect upon donor or recipient.

CONCLUSION.

It is still unfortunately true that we do not know the cause of pernicious anemia and that we must still regard it as invariably fatal. We have learned much concerning its patho-

genesis. We can by various methods give its victims a small measure of relief and a little longer lease of life. There is no one measure or method of treatment that is always indicated in every case. We must, at any moment, choose for the case in hand the means best adapted to meet the indications of the moment. So far as we can speak of a systematic treatment, it is in the writer's opinion something as follows:—

Every case should receive arsenic, best administered continuously by the mouth. If the Wassermann reaction is positive or if there is other evidence of syphilis, salvarsan should be used. Iron should seldom be given except during recovery from relapses, where the increase in red corpuscles outstrips the increase in hemoglobin and the blood-picture approaches that of benign anemia. The diet should always be carefully regulated with a view to controlling protein putrefaction and intestinal indigestion, and preserving the nutrition. Hydrochloric acid and other aids to gastric digestion should be used freely. When the anemia is rapidly increasing the careful use of catharsis and regular and thorough lavage of the colon and perhaps also of the stomach is in order. If the anemia still progresses, and especially in hemorrhagic and aplastic states, transfusion, best by Kimpston's tubes, should be done. If one or more transfusions are not followed by remission, it is justifiable to remove the spleen.

REFERENCES.

- ¹ Cabot: Modern Medicine. First edition, iv, 635. Second edition, ix, 639.
- ² Gunn: Brit. Med. Jour., 1908, ii, 145 and 2481. Gunn and Feltham: Brit. Med. Jour., Jan. 21, 1911.
- ³ Hill: Archives of Int. Med., 1915, xvi, 809.
- ⁴ Bramhall: Brit. Med. Jour., 1913, ii, 1093 and 2734; Brit. Med. Jour., 1915, i, 406.
- ⁵ Boggs: Johns Hopkins Hosp. Bull., 1913, xxiv, 322.
- ⁶ Herter: Jour. of Biol. Chem., 1906, i, 415; 1906, ii, 1.
- ⁷ Iwao: Biochem. Zeitschr., 1914, lrs, 426.
- ⁸ Cederborg: Berlin klin. Wochenschr., 1914, li, 585.
- ⁹ Schmidt: Am. Jour. Med. Sci., 1914, cxlviii, 313.
- ¹⁰ Cabot: Modern Medicine. Second edition, iv, 632.
- ¹¹ Arnold: Jour. A. M. A., 1910, iv, 2195.
- ¹² Gravitte: Klinische Pathologie des Blutes.
- ¹³ Cannon: Bodily Changes in Pain, Hunger, Fear and Rage, 1915.
- ¹⁴ Banti: Semaine medicale, 1913, No. 27, p. 313.
- ¹⁵ Epinger: Berliner klin. Wochenschr., 1913, i, 1509 and 2409.
- ¹⁶ Wilbur and Adlis: Archives of Int. Med., 1914, xiii, 235.
- ¹⁷ Robertson: Archives of Int. Med., 1915, xv, 1072. Also 1915, xvi, 429.
- ¹⁸ Pearce *et al.*: Jour. of Exper. Med., 1912, xvi, 363 and 780. Also 1913, xviii, 487, 494 and 665.
- ¹⁹ Hill: Archives of Int. Med., 1915, xvi, 809.
- ²⁰ Lee, Minot and Vincent: Jour. A. M. A., 1906, lxxvii, 719.
- ²¹ Giffin: Jour. A. M. A., 1916, lxxvii, 797; also 1917, lxxviii, 429.
- ²² Krumpholtz: Jour. A. M. A., 1916, lxxvii, 723.
- ²³ Hampton and Brown: Jour. A. M. A., July 12, 1913. Also Nov. 1, 1913. BOSTON MEDICAL AND SURGICAL JOURNAL, Nov. 27, 1913.
- ²⁴ Larrabee: Jour. of Med. Research, 1911, xxix, 15.

WILLIAM W. BURNETT, M. D., of Wrentham, Mass., died on February 18 of heart disease while returning from a night call in an adjoining town. Dr. Burnett was born in New York City Nov. 9, 1848. He graduated from the New York Homeopathic Medical College in 1870, practiced medicine in that city, in Freehold, N.Y., in Washington, D. C., and in Amherst, Mass. He had been located in Wrentham for about twenty years. He was a member of the Washington Medical Society and the American Institute of Homeopathy. A widow and two children survive him.

Original Articles.

RETROVERSION OF THE UTERUS: ITS ETIOLOGY AND RATIONAL TREATMENT.*

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RETROVERSION of the uterus and its treatment, operative and non-operative, have long constituted a fertile field for the ingenuity of the surgeon. Without taking note of the wide variety of mechanical devices for the support of the uterus, Meeker,¹ of New York, is authority for the statement that over eighty different operations for retroversion have been devised. According to the same writer, 131 papers on posterior displacements of the uterus were published during the year 1913 alone. This large amount of literature represents a wide divergence of opinion on numerous points, and the object of this paper is to try to correlate and reconcile as far as possible these differing ideas with each other and with what the writer believes to be the truth.

Up to about 1895, retroversion was considered a clinical entity, with a symptomatology, pathology, and treatment distinct from and unrelated to, other conditions. In that year, Theilhaber,² before the VII Congress der Deutscher Gesellschaft für Gynäkologie, advanced the opinion that the symptoms which had been ascribed to retroversion—backache, abdominal pain, hemorrhage, leucorrhea, bladder disturbance, nervousness, dysmenorrhea and sterility—were in reality due to other conditions associated with the retroversion, of which the displacement was an accidental accompaniment. Theilhaber's views met with a storm of opposition. Nevertheless his paper reopened the question and paved the way for a reinvestigation of the subject, as a result of which his ideas met with confirmation from many sources. I will quote some well-known writers whose opinions support Theilhaber.

J. Montgomery Baldy³ says, "Retroadplacements of the uterus are mostly coincident with other lesions, and where such is the case the symptoms almost universally come from the associated disease."

J. Wesley Bovee⁴ says, "I am convinced that uncomplicated uterine retroversion has no symptoms."

Howard A. Kelly,⁵ in 13,600 gynecological cases at the Johns Hopkins Hospital, found 1886 retroflexions, of which 415 were uncomplicated.

W. J. Mayo⁶ says, "While the normal position of the uterus in the majority of women,

* Read before the Chirurgical Society of Boston, Oct. 27, 1916.

perhaps 75%, is more nearly anterior than posterior, it will be acknowledged that in at least 25% and at various ages, retroversion exists."

Schroeder⁷ examined 145 medical patients complaining of no pelvic symptoms, and found the uterus in anterior position in 75% and retroverted in 25%.

The writer in 1000 consecutive gynecological patients admitted to the Boston City Hospital during the first six months of 1914, found 306, or approximately 30%, with retroversion. Out of this number, only 13 were operated upon for an uncomplicated retroversion.

Practically every recent text-book admits the occurrence of retroversion without symptoms, yet it cannot be said that the ideas which I have quoted have gained general acceptance. The existence of eighty operations for retrodisplacements, most of them invented since Theilhaber's first communication, is sufficient evidence to the contrary.

Wherein, then, lies the cause for this difference of opinion?

Are there retroversions which give symptoms, and those which do not? If so, can the two types be recognized?

Can a retroversion be symptomless at one time, and give symptoms at another?

And, finally, what is the relation of retroversion to miscarriage and sterility?

For the answer to these questions we must go back to the etiology of the condition. At present retroversions are generally divided into three main classes as regards their etiology.

1. Inflammatory, due to the contraction of adhesions formed in the course of pelvic inflammatory disease.

2. Congenital.

3. Acquired, as the result of injuries during childbirth.

Inflammatory Retroversions. Retroversions resulting from pelvic inflammatory disease form perhaps the smallest of the three groups, yet the patients in this class most urgently demand relief, not for the displacement itself, but for the accompanying inflammatory disease. Out of 164 cases of salpingitis among the 1000 gynecological patients previously mentioned, the uterus was found retroverted in 79, or nearly 50%. In a considerable proportion of these cases, the retroversion must have been an accidental complication, since 30% of all gynecological patients were found to have retroversion. In the remainder of the cases, the retroversion was unquestionably the result of the inflammatory condition. It was formerly supposed that retroversion in the course of pelvic inflammatory disease is produced by a simple contraction of adhesions drawing the fundus backward. It is the writer's belief that the mechanism is somewhat more complicated. In a certain number of these cases classified as retroversion the cervix was found pushed forward toward the symphysis by a mass in the posterior cul-de-sac, throwing

the fundus into relative retroversion. It is the writer's belief that this forward displacement of the cervix represents the first stage in inflammatory retroversion, the process being completed by shrinking of the mass in size; contraction of adhesions between the mass and the posterior surface of the uterus finally drawing the uterus back into complete adherent retroversion.

The diagnosis of this type of displacement is made on the evidence of the accompanying inflammatory process. The symptoms of the retroversion, if there are any due to the malposition itself, are covered up by those of the more urgent condition. The treatment of the retroversion is secondary and incidental to that of the inflammatory disease. After removal of the diseased appendages, the uterus may be suspended, by the round ligaments if any possibility of future pregnancy remain, or by the fundus if total ablation of the appendages has been performed.

Congenital Retroversions. If a patient with retroversion has no inflammatory condition and has never borne children, the displacement must be of the congenital type. By the study of these undoubted cases it is possible to determine certain definite characteristics by which the congenital type can be recognized. The anterior vaginal wall is short and has a low attachment to the cervix, which is fixed in the axis of the vagina. In nulliparae the cervix is somewhat contracted. There is usually a distinct flexion between the body and cervix. This type of retroversion is seldom replaceable. The cervix is fixed, and even in multiparous women is not as movable as in the retroversions acquired at childbirth.

Retroversions Resulting from Childbirth. The retroversions resulting from injury and relaxation due to childbirth (and of course a congenital displacement may be converted to one of this type as a result of such injury) are characterized by abnormal mobility of the cervix, and practically always accompanied by descensus, of greater or less degree. In other words, these retroversions are merely a stage in prolapse of the uterus. But these are the retroversions which give symptoms and most frequently demand treatment. These retroversions, unless they have developed from the congenital type, or unless pelvic inflammatory disease has been superimposed, are always freely movable and usually replaceable. Fully to understand and differentiate these last two types, it is necessary to take up separately the etiology of each.

Etiology of the Congenital Type. Comparative anatomy, which is of great aid in explaining many anomalies of the human body, gives little help in this condition. In the lowest animal types the ova are discharged from the surface of the ovary directly into the abdominal cavity and find their way into the outer world by means of an aperture in the peritoneum. In the higher animal forms there is a uterus which is always bicornuate, although in

certain types, notably birds, only one horn functionates. These horns are more or less convoluted and unite to form a short uterine body, which in turn opens into the vagina, the two lying in a continuous axis. The pelvic floor and fasciae are little developed, and the uterus receives its support chiefly from the mesometrium, which corresponds to the broad ligaments of the human female, and which is attached to the last rib and posterior abdominal parietes. In the domestic animals—mare, bitch, cow, etc.—the anterior position of the uterus begins to be well marked, although an angle between the uterine and vaginal axes is not necessitated by an erect position of the animal.

In the human female alone the uterus is a pelvic organ. In the lower animals it is abdominal. In the human embryo it is abdominal also. At birth it is retroverted about in the axis of the vagina (Graves).⁸ During the development of the child it gradually sinks lower into the pelvis, and under the more common circumstances the corpus becomes drawn forward and the cervix back, and a slight (sometimes acute) angle of flexion is formed between the two. In a smaller number of individuals the retroversion persists. Goldsborough⁹ has suggested that the explanation of this is as follows: if the anterior vaginal wall is short and tense and the utero-sacrae lax, the cervix is drawn forward and the fundus automatically carried backward. If the anterior wall is normally lax, the cervix is drawn by the utero-sacrae and the fundus falls forward into its usual position. As a corollary to this it may be added that when the fascia of the anterior vaginal wall is short and tense and has a low attachment to the cervix, and the utero-sacrae are also tense, the cervix is held in the axis of the vagina, although the fundus may be in anterior position (antelexion). Goldsborough's hypothesis fully answers for the position of the cervix, but does not account for the position of the corpus. Some other force, probably the round ligaments, draws the fundus forward.

The writer's own view is that in these cases of congenital retroversion, the fetal position persists as a failure in development. The axis of the uterus remaining continuous with that of the vagina would predispose to prolapse, but just as Lane¹⁰ has shown that Nature forms peritoneal adhesions about a mobile cecum to hold it in place, so adhesions are formed between the posterior surface of the uterus and the peritoneum over the rectum to resist downward displacement of the uterus. In some patients the fundus seems to flex backward instead of forward, for reasons which cannot be explained at present.

Etiology of Retroversions Acquired as a Result of Childbirth. As shown by Webster,¹¹ by Bissell,¹² by Hadden,¹³ by Goffe,¹⁴ and numerous others, including the writer,¹⁵ the main support of the uterus in the pelvis is the pelvic fascia. (Fig. 1.) The pelvic fascia is continuous above

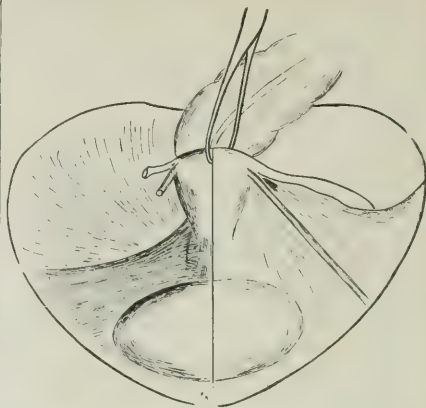


FIG. 1.

PELVIC FASCIA AND CARDINAL LIGAMENT. (EXPPOSED ON RIGHT.)

anteriorly with the transversalis fascia, laterally with the iliac fascia, and posteriorly with the anterior layer of the lumbar fascia. Sweeping downward and inward from the brim of the pelvis, this fascia invests the vagina, the axis of which lies parallel to the plane of the superior strait, and forms a firm fibrous sling, upon which rests the bladder, and which by its insertion into the cervix at the level of the internal os, makes that part of the uterus normally the most fixed point of the organ. (Fig. 2.)

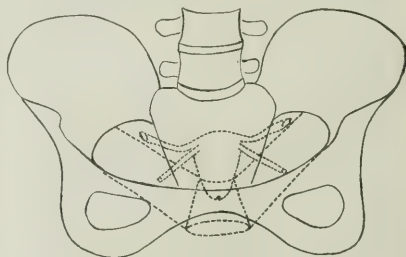


FIG. 2.

DIAGRAMMATIC VIEW OF FASCIAL SLING AND ITS ATTACHMENTS.

The fascia, at its insertion into the cervix, is reinforced laterally by a band of fibers extending inward from the wall of the pelvis, and spreading as they proceed to form a somewhat fan-shaped insertion into the lateral aspect of the uterus. (Fig. 3.) In this band of fibers runs the uterine artery. This reinforcement of the pelvic fascia is the so-called cardinal ligament of the uterus (Kochs¹⁶), or transverse ligament of the cervix (Mackenrodt¹⁷), or as Dudley¹⁸ and Reynolds¹⁹ have called it, the fibrous base of the broad ligament. Moritz²⁰ and others deny the existence of the cardinal ligaments, but Moritz admits the presence of much fibrous tissue about the uterine vessels. It makes little

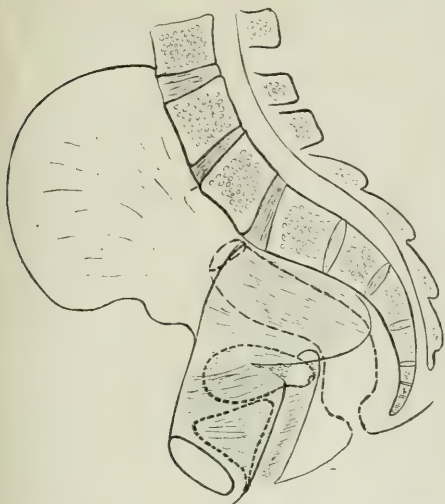


FIG. 3.

PELVIC FASCIA AND CARDINAL LIGAMENT. (SAGITTAL SECTION.)

difference by what name we call this structure, it is a part of the pelvic fascia and the pelvic fascia is the chief support of the uterus. Posterior to this ligament the fascia dips more deeply into the pelvis and sends a strong insertion to the rectum.

The pelvic floor lies at a distinctly lower level than the pelvic fascia. It is formed by the levator ani muscles, with the fasciae covering them, the small muscles of the pelvic outlet and the perineal fascia. The levator ani is divided into two parts, the posterior of which, or obturator coccygeus, arises from the inferior aspect of the white line formed by the division of the pelvic and obturator fasciae, and is inserted into the side of the coccyx, and serves chiefly to fill in the space between the ischium and the lower end of the vertebral column. It is with the anterior portion of the muscle, or pubo-coccygeus, that we are more intimately concerned. The pubo-coccygeus arises from the posterior surface of the os pubis and passes backward on either side of the vagina, to be inserted into the tip of the coccyx and the fasciae of the pelvic outlet, many of the fibers being inserted into a median raphe behind the rectum. There is much reason to believe that no fibres of the levator are inserted into this median raphe in front of the rectum. Studdiford²¹ and others have failed to find any such fibres between the vagina and rectum. The connection of the levators with the fasciae of the perineum is so intimate, however, that an injury which caused separation of the muscle from the fascia would exert practically the same effect as damage to the muscle itself. The fascial sheath of the levator is derived from the fascia forming the

posterior vaginal wall above and the anal fascia beneath, the two layers being continuous about the inner border of the muscle.

The small muscles of the perineum, the transversus perinei, sphincter vaginae, and ischio-cavernosus are of small size and little importance. In fact it is very difficult to demonstrate them in a multiparous subject. Of much greater value is the perineal fascia, analogous to the triangular ligament in the male. This is a firm fascial plane which stretches between the ischio-pubic rami, forming the external portion of the perineum. It unites at the fourchette with the fascia of the posterior vaginal wall. The perineal body consists of a little fibrous tissue between these fasciae, but the perineal fascia and the levator and its fascia, and not the perineal body, constitute the strength of the perineum.

The bladder and uterus are supported by the superior fascial plane. The posterior vaginal and anterior rectal wall are supported by the pelvic floor or inferior musculo-fascial plane. When as a result of the trauma of childbirth, or subinvolution or too early rising after confinement, the superior fascial plane becomes stretched out, the cervix descends in the pelvis and becomes abnormally movable. There is usually also a cystocele of greater or less degree. As the process goes on the cervix drops downward and forward, the fundus becoming retroverted secondarily. Finally all the supports become relaxed and the uterus can be put into any position. If this condition goes on far enough procidentia of the uterus and bladder outside the body will occur. In other words, retroversion of this type, as has been stated, is not a condition by itself but a part of the process of prolapse.

The treatment of retroversion. The treatment of the inflammatory type of retroversion is the treatment of the accompanying condition first, incidentally correcting the malposition if it seems advisable.

Congenital retroversions as a rule cause no symptoms and demand no treatment. Under certain conditions, as the increasing weight of the uterus during early pregnancy, or if the patient is subjected to unusual fatigue as by long standing, a temporary backache may develop, but operative measures are practically never necessary.

The symptoms of prolapse in its early stage are very definite and trying to the patient,—backache, abdominal soreness and a general sense of bearing down, sometimes interfering with standing and walking. A source of great confusion in diagnosis is the existence of a lumbar or thoracic backache with retroversion. It is now generally recognized that backaches of pelvic origin are practically always sacral in location, and that when the patient complains of pain higher up in the back, even though she has a retroversion, the chances are strongly against the retroversion being the cause of the backache.

A patient with beginning prolapse will require treatment. It is best, when possible, to defer operation until after the childbearing period, because of the increased difficulty of future labors and the likelihood of a return of the condition following another childbirth. In such patients, pessaries, while never absolutely satisfactory as a permanent measure, will often tide the patient successfully along until after the childbearing age when operation can be more safely performed. Tampons, douches and the knee chest position for frequent short periods are all of aid as palliatives.

The operative treatment of this type of retroversion must not only correct the backward displacement of the uterus, but also should restore the fascial supports. Failures in the operative treatment of retroversion are due in practically all instances either to:

(a) Operations done on cases where the correction of the retroversion was not indicated, *i. e.*, cases of the congenital type where the patient's symptoms were incorrectly assumed to be due to the malposition and were in reality due to something else.

(b) Treatment of the retroversion without regard for the mechanical factors which had resulted in the displacement, *i. e.*, suspending the uterus without restoring its fascial supports.

The operative treatment of retroversions acquired at childbirth is therefore incidental to and part of the operative treatment of prolapse, of which such retroversions are but a part. Space forbids a prolonged discussion of operations for prolapse, but the writer wishes to call attention to the essential principles upon which such operations should be based. These principles are in brief:

(a) A restoration of the superior fascial plane to its normal tension.

(b) A restoration of the inferior or musculo-fascial plane as nearly as possible to its normal anatomy.

It is practically impossible to restore the superior fascial plane to its original anatomical condition, once it has been badly stretched out, so we have to rely largely on restoring its tension sufficiently to hold up the bladder and uterus. There are many operations designed to secure this result by widely diversified methods. The more worthy of consideration are included in the following list.

1. Simple plastics.
2. Interposition operations (Schauta, Wertheim, Watkins).
3. Plication of the pelvic fascia.
 - By vaginal route.
 - Plication of the cardinal ligaments (Alexandroff, Dudley, Goffe, Nyulasy).
 - Vaginal hysterectomy with side to side approximation of the fascia (Mayo, Truesdale).
 - By abdominal route.
 - Abdominal plication of the pelvic fascia (Polk).
4. Ventral suspension.
 - By fundus (Olshausen, Kelly).

By round ligaments (Gilliam, Simpson, Noble, Mayo, Webster, Baldy).
 By cervical stump after hysterectomy.
 By inclusion of uterus in abdominal wall (Harris, Kocher, Murphy).

5. Posterior suspension.

By shortening the utero-sacral.
 By obliteration of the cul-de-sac of Douglas (Moschowitz, Jones).
 By tendon of *psaos parvus* (Harris).

Simple plastics. It seems fairly well settled that simple plastics alone will not cure procidentia, although they form an important part of, or addition to, nearly all the procedures to be described. The writer will not attempt to describe the technic of these operations in detail because most of them are sufficiently well known to make such a description superfluous, but will try to point out the anatomical basis of each which is not so well understood. The old cystocele operation depends for its success upon the ability to pick up and bring together some strong fascia from the sides of the denudation. It is seldom possible to get strong enough fascia in this way to hold up a prolapsed uterus without other help.

*Interposition operations.*²² The anatomical principles of the interposition operation consist in a resection of the fascia of the anterior vaginal wall, displacement of the bladder upward and turning the fundus forward beneath the bladder, practically turning the uterus upside down. The fundus is then anchored to the strong fascial plane near its pubic attachment, and the displacement of the cervix upward and backward puts the rest of the superior fascial plane upon the stretch. The success of this operation depends chiefly upon a firm uterus that will maintain the cervix in its displaced position.

Plication of the pelvic fascia. These operations are more strictly anatomical. Alexandroff²³ sutured the cardinal ligaments together in front of the cervix. Dudley²⁴ detached these ligaments from their uterine insertion and united them in front of the cervix. Nyulasy,²⁵ of Australia, plicates each cardinal ligament separately. The danger of all these operations is that the uterine artery or vein may be pricked very easily in introducing sutures through the cardinal ligaments, which accident has resulted in fatal secondary hemorrhage. Goffe,²⁶ in addition to plicating the ligaments, sutures the neck of the bladder to the uterus in its new position. Mayo²⁷ does a vaginal hysterectomy and then unites the fascia from side to side, thus taking up the slack and removing the weight of the uterus at the same time. Truesdale²⁸ turns out the uterus as for an interposition operation but then resects the uterus, uniting the fascia with a strip of uterine tissue from side to side but in an inverted position.

Polk²⁹ does the most strictly anatomical of all the operations. He separates the bladder and uterus from above, exposing a large part of the

superior fascial plane. He then plicates this fascia by continuous suture.

Ventral suspension. These various suspension operations are done only in conjunction with plastic operations and serve the double purpose of removing part of the weight of the uterus and helping to keep the fascia on the stretch after it has been reefed by the plastic operation, and thus maintain the support of the bladder. The round ligaments are as a rule entirely inadequate to stand the strain of supporting the uterus and bladder without pulling out, and round ligament suspensions are contraindicated by prolapse. In fact, Harris,³⁰ Kocher,³¹ and Murphy³² have even gone so far as to incorporate the fundus in the abdominal wall for added strength. Harris sutured the fundus to the under surface of the fascia. Kocher brought the fundus up through the fascia, and Murphy did likewise, but in addition bisected the uterus, removed the endometrium, and then sutured the two halves of the uterus separately to the upper surface of the fascia.

Posterior suspension. Shortening the uterosacra is done with the idea of resisting the downward and forward displacement of the cervix which is the first stage in prolapse. The chief criticism of the operation is that these ligaments, like the round ligaments, are often inadequate to withstand the strain which is to be imposed upon them. Furthermore, this operation does not take into account the real anatomical support of the uterus.

Moschowitz³³ and Jones³⁴ have obliterated the posterior cul-de-sac by a purse-string suture picking up the peritoneum and underlying fascia, thus drawing the cervix backward.

Harris³⁵ conceived the ingenious idea of using the tendon of the *psaos parvus* to support the cervix in its normal position. The tendon is divided and its distal segment sutured to the posterior surface of the cervix. Should the *psaos parvus* be absent part of the *psaos magnus* may be used. Practically all these operations are intended to be accompanied by a perineorrhaphy to complete the restoration of the pelvic supporting planes.

Retroversion and pregnancy. Retroversion is frequently cited as a cause of sterility. The writer has reviewed the records of all patients coming to the Out-patient Department of the Boston City Hospital for the relief of sterility, from August 1, 1914, to August 1, 1916. Excluding cases with definite salpingitis or other obvious causes of sterility, there were left fifty patients. In these fifty patients showing no detectable abnormality of the appendages the position of the uterus was as follows:

Anteflexion	29, or 58%
1st degree retroversion	4, or 8%
2nd degree retroversion	12, or 24%
3d degree retroversion	5, or 10%

Classifying first degree retroversion as anterior position, which it really is, there were

about 2-3 anterior and 1-3 posterior positions of the uterus or about the same proportion as in the 1000 gynaecological house patients already mentioned. Among these 1000 patients there were 284 married women with retroversion. Of these, only 21 had never been pregnant and of these 21, nine had distinct evidence of tubal disease, leaving only twelve in whom the retroversion could possibly be considered as a cause of sterility, or 4.2%, a rather small proportion if retroversion is to be indicated as a cause of sterility. It is apparent from this very brief survey that something more than the position of the uterus alone is necessary to account for sterility.

With regard to retroversion as a cause of miscarriage: In retroversion of the congenital type, the malposition is usually corrected spontaneously about the third month. This we know, aside from the few cases we are able to follow, by the fact that while, as we have shown, pregnancy in a retroverted uterus must be very common, incarceration is very uncommon. Occasionally the pregnant uterus does become incarcerated, and reposition under anaesthesia becomes necessary. This accident is more likely to happen in the cases of retroversion associated with prolapse because the lower position of the uterus in the pelvis makes it more easily caught under the promontory, and the greater mobility of the organ also allows the retroversion to increase under the growing weight of the uterus during pregnancy. Where the retroversion is of the acquired type and freely replaceable, a pessary should be inserted and worn until the uterus rises out of the pelvis about the fourth month.

When the retroversion is of the congenital type and not replaceable, the patient should be kept under observation and examined once a week in order to detect evidence of beginning incarceration, in which case the position must be corrected under anaesthesia.

What should be done with a uterus found retroverted after confinement? If the retroversion is of the congenital type and is giving no symptoms it may be safely let alone. If there is considerable mobility of the cervix or definite prolapse, the patient will practically always have backache or other symptoms. In these cases pessary treatment should be instituted to prevent further development of the displacement.

CONCLUSIONS.

1. Retroversions of the uterus may be divided into three classes.

(a) Inflammatory, in which the uterus is displaced by a pus mass and the fundus afterwards drawn backward by adhesions.

(b) Congenital, in which the retroversion may be said to be the normal position of the uterus for that individual.

(c) Acquired, as the result of injury or relaxation consequent upon childbirth in

which the retroversion is not a condition *per se*, but a part of the general process of prolapse.

2. In retroversions of the first class, treatment is directed primarily to the inflammatory process and the displacement is corrected only incidentally.

3. Congenital retroversions are usually symptomless and require no treatment.

4. Retroversions acquired as the result of parturition should be considered as a step in prolapse of the uterus and the downward as well as the backward displacement corrected.

5. Retroversion is an infrequent cause of sterility in itself.

6. Retroversion may cause miscarriage if the uterus becomes incarcerated but most retroversions are corrected spontaneously during the early months of pregnancy.

7. A retroverted uterus discovered on post-partum examination, if obviously congenital in type, needs no treatment. If of the acquired type, the malposition should be corrected and treatment by pessary instituted, deferring operation if possible until the patient has passed the childbearing period.

REFERENCES.

- ¹ Meeker: Amer. Jour. Obst., 1915, lxxi, 458.
- ² Theilhaber: Monatsschr. f. Gyn., 1895, ii, 266., Surg., Gyn., and Obst., 1907, iv, 345.
- ³ Baldy: Surg., Gyn. and Obst., 1908, viii, 421.
- ⁴ Bovee: Surg., Gyn. and Obst., 1915, xx, 606.
- ⁵ Kelly: Surg., Gyn. and Obst., 1915, xx, 599.
- ⁶ W. J. Mayo: Jour. A. M. A., 1912, lix, 1421.
- ⁷ Schroeder: Quoted by Theilhaber, *loc. cit.*
- ⁸ Graves: Gynaecology, 1916, p. 17.
- ⁹ Goldsborough: N. Y. State Jour. Med., 1914, xiv, 564.
- ¹⁰ Lane: Surg., Gyn. and Obst., 1910, xi, 495.
- ¹¹ Webster: Text Book Diseases Women, 1907, p. 90.
- ¹² Bissell: Amer. Jour. Obst., 1915, lxxi, 561.
- ¹³ Hadden: Amer. Jour. Obst., 1914, lxxi, 316.
- ¹⁴ Goffe: Trans. Amer. Gyn. Soc., 1912, xxxvii, 394.
- ¹⁵ Williams: Amer. Jour. Obst., 1915, lxxi, 575.
- ¹⁶ Kochs: Die normale u. pathol. Lage des Uterus, etc., Bonn, 1880.
- ¹⁷ Mackenrodt: Archiv. f. Gyn., 1895, xlviii, 393.
- ¹⁸ Dudley: Jour. A. M. A., 1906, xlvii, 1605.
- ¹⁹ Reynolds: Trans. Amer. Gyn. Soc., 1912, xxvii, 235.
- ²⁰ Moritz: Jour. Obst. and Gyn. Brit. Emp., 1913, xxiii, 135.
- ²¹ Studford: Trans. Amer. Jour. Gyn. Soc., 1909, xxvii, 759.
- ²² Watkins: Trans. Amer. Gyn. Soc., 1909, xxvii, 123.
- ²³ Alexandroff: Zeits. f. Gyn., 1903, xxviii, 749.
- ²⁴ Dudley: *loc. cit.*
- ²⁵ Nyulasy: Surg., Gyn. and Obst., 1916, xxi, 105.
- ²⁶ Goffe: Surg., Gyn. and Obst., 1916, xxi, 105.
- ²⁷ Mayo: Surg., Gyn. and Obst., 1915, xx, 252.
- ²⁸ Truesdale: BOSTON MEDICAL AND SURGICAL JOURNAL, 1916, clxxx, 13.
- ²⁹ Polk: Trans. Amer. Gyn. Soc., 1909, xxxiv, 144.
- ³⁰ Harris: Quoted by Crossen, Oper. Gyn., p. 126.
- ³¹ Koerber: Text Book Oper. Surg., 1911, p. 706.
- ³² Murphy: Quoted by Mayo, *loc. cit.*
- ³³ Moschowitz: N. Y. State Med. Jour., 1912, xii, 654.
- ³⁴ Jones: BOSTON MEDICAL AND SURGICAL JOURNAL, 1916, clxxx, 623.
- ³⁵ Harris: Jour. A. M. A., 1910, liv, 1605.

BUBONIC PLAGUE IN LIVERPOOL.—It is reported that bubonic plague has made its appearance at the Port of Liverpool and the New York quarantine department has issued the order that all vessels, excepting passenger ships from Liverpool, shall be subject to fumigation at the end of every voyage, for the destruction of rats, and shall comply with the plague regulations of this port.

A POINT SCALE FOR THE MEASUREMENT OF INTELLIGENCE IN ADOLESCENT AND ADULT INDIVIDUALS.*

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THE application of the original pre-adolescent point scale has proved that it yields most reliable measurements of intelligence from the ages of 6 or 7 to 12 or 13 years. The scale offers too few opportunities for credit to individuals under 7 years, and too few opportunities for failure to bright individuals above 13 years. It has, therefore, seemed to us desirable to develop two additional point scales to supplement the original scale: the one to be called an infant scale; the other, an adolescent scale. With the completion of these, we should have, for the measurement of intelligence, three scales of twenty tests each which may conveniently be designated as: (1) the infant scale, (2), the child scale, and (3) the adolescent scale. The latter should be understood as covering maturity as well as adolescence.

Late in 1915 we assembled twenty tests as an adolescent point scale group, arranged them chiefly in accordance with convenience of presentation, weighted them in the light of our clinical experience, and proceeded to accumulate data which should enable us thoroughly to criticize the proposed scale and profitably to revise or reconstruct it.

It is the purpose of this report to describe the initial form of the adolescent point scale, with the directions for its use, and to present certain general results from approximately two hundred and fifty examinations.

It should be stated with emphasis that the point scale herein described is merely a provisional group of tests which we have no thought of standardizing, but which we propose to revise thoroughly on the basis of the results obtained by various examiners before we enter upon the task of securing norms for the individual tests and for a revised form of the scale.

The record blank which we have employed is reproduced below one-half size. It consists of four pages, the tests on which are so arranged that all of those involving writing or drawing by the subject appear on page 4.

Most of the tests of the group are in principle old, although much new material has been

* Being a contribution of the Massachusetts Commission on Mental Diseases, whole number 167 (1917.1). The previous contribution (166, 1916.24) was by E. E. Southard and M. M. Canavan, entitled "The Stratigraphical Analysis of Finer Cortex Changes in Certain Normal-looking Brains in Dementia Praecox," to appear in *Journal of American Neurological Association*.

PSYCHOPATHIC DEPARTMENT

BOSTON STATE HOSPITAL

RECORD BLANK FOR YERKES-ROSSY ADOLESCENT-ADULT POINT SCALE EXAMINATION

NAME	AGE	DATE OF BIRTH	SCORE
DATE	PLACE OF BIRTH		COEF. I. A.
EXAMINED BY	NATIONALITY		MENTAL AGE

TEST	CREDITS
------	---------

1. Response to pictures (1 each)	
----------------------------------	--

(a)

(b)

(c)

2. Comparison of weights (1 each)	
-----------------------------------	--

(a) 6 and 9 grams.

(b) 12 and 15 grams.

(c) Arranging weights 3, 6, 9, 12 and 15 grams in order

3. Memory span for digits (1 each)	
------------------------------------	--

(a) 9-2-8-7-4

6-1-8-5-3

(b) 5-8-2-7-6-9

8-4-7-4-9-2

(c) 7-2-8-3-1-6-5

1-7-4-9-3-2-6

(d) 6-9-4-1-3-8-2-7

1-8-1-5-9-4-6-2

(e) 2-9-4-7-5-8-6-3-1

4-7-2-6-7-5-1-3-8

4. Suggestibility (1)	
-----------------------	--

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

5. Memory for unrelated sentences (1 each)	
--	--

(a) The sea is very rough. Skill comes with patience.

(b) There are many kinds of play and work. We should always be truthful.

(c) No one can afford to be untrue to himself. It is time for us to return.

(d) I saw a large, black object in the sky. If he had seen the happy young face, his heart would have melted.

(e) As we looked across the dark, gray plain, our eyes ached. It is not possible to acquire too many good habits of mind.

TEST

6. Comparison of terms (2 each)

(a) Milk and water

(b) Paper and iron

(c) Idleness and laziness

Comprehension of questions (1 each)

(a) Why is a train safer than a steamer or an airplane?

(b) Why is it better to judge people by what they do rather than by what they say?

(c) Who should we be more ready to forgive an unkind act done in anger than one done without anger?

(d) Why should a man accused of a crime be considered innocent until he is proved guilty?

(e) Why is honesty the best policy?

8. Definitions of abstract and concrete terms (2 each)

(a) House

(b) Door

(c) Honesty

(d) Conceit

9. Appreciation of absurdities (1 each)

(a) It has been found that the front car of a train is damaged most in case of an accident. It therefore seems best to leave off the last car.

(b) The commissioner have resolved to build a new jail from the materials of the old jail, but they cannot keep the prisoners in the old jail until the new one is finished.

(c) A father wrote to his son: "I enclose ten dollars. If you do not receive this letter, please send a telegram."

(d) A man wished to dig a pit in which to bury some rubbish. He could not decide what to do with the dirt from the pit. A friend suggested that he dig the pit large enough to hold the dirt too.

(e) A man claims that he has a telescope which is so powerful that when he looks at a church five miles away, it appears so near that he can hear the organ playing.

CREDITS

TEST

10. Analogies (1 each):
- (a) Pocket is to coat as closet is to
 - (b) Sun is to day as moon is to
 - (c) Arm is to elbow as leg is to
 - (d) Known is to unknown as present is to
 - (e) Whole is to part as six is to
 - (f) Sunday is to Saturday as January is to
11. Association of opposites (4):
- | | | | | |
|---------|--------|---------|----------|-------|
| Wise | Never | Busy | Generous | Manly |
| Silent | Joy | Distant | Horrid | Rough |
| Similar | Prompt | Lazy | Rude | Upper |
| Cheap | Vacant | Easy | Top | After |
12. Relational test (2 each):
- (a) Middle
 - (b) Second from left
 - (c) Fourth from right
 - (d) One place to right of middle
13. Box test (1 each):
- (a) Large box containing two smaller boxes with one still smaller in each of the two
 - (b) Large box containing two smaller boxes with two inside of each
 - (c) Large box containing three smaller boxes with three inside of each
 - (d) Large box containing four smaller boxes with four inside of each
14. Ingenuity (2):
- (a) If you were asked to get seven pints of water from a well, and were given a three-pint vessel and a five-pint vessel, could you measure out exactly seven pints without guessing at the amount if you began by filling the five-pint vessel first? (3)
 - (b) Five and seven-pint vessels to get eight pints, filling first the five-pint vessel? (2)
 - (c) Four and nine-pint vessels to get seven pints, beginning by filling the four-pint vessel? (2)

CREDITS

TEST

15. Comparison of capital letters (2):

L H N I Y V M

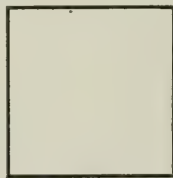
16. Code learning test (1 each):

(a) h c f i b g d a e

(b) 5 8 1 7 2 4 0 3 6

17. Ball and field (2):

18. Geometrical construction (4):



19. Reproduction of diamond (2):

20. Memory for designs (2 each):

CREDITS

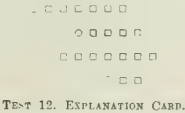
introduced, and in a few instances the tests have been so modified as to be markedly different from their earlier forms.

For Test 1 there are used, instead of the Binet pictures, three Perry pictures (Boston Edition, penny size):

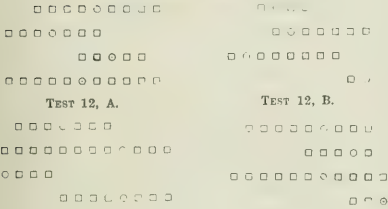
- a. Picture No. 893, entitled "Saved,"
- b. Picture No. 1076, entitled "The Music Lesson,"
- c. Picture No. 2785, entitled "The Child Handel."

For Test 2 the same set of weighted cubes is employed as in the original point scale. The Healy butcher shop picture is used for Test 4, in accordance with the directions given below.

Test 12 is a new test based upon the Yerkes multiple choice method of measuring ideational efficiency.¹ The five cards which are used as materials for this test appear in Fig. 1 reduced one-half. In our set of materials, the standard card for this test measures 6 by 8 inches.



TEST 12. EXPLANATION CARD.



TEST 12, A.

TEST 12, B.

TEST 12, C.

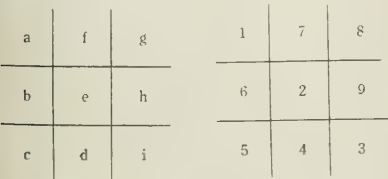
TEST 12, D.

FIG. 1.

Tests 13, 14, and 17 are taken directly from the Stanford Scale.

The material for Test 15 is presented on the record blank, on the fourth page of which appear seven capital letters, which are to be arranged in order of increasing total length of line. These letters appear reduced by one-half in the facsimile of the record sheet.

For the code learning test an explanatory drawing and letter code with the word *nor* written in symbols is first presented by the experimenter.[†] Then the cards, reproduced half size, as Fig. 2, are presented.



TEST 16, A.

TEST 16, B.

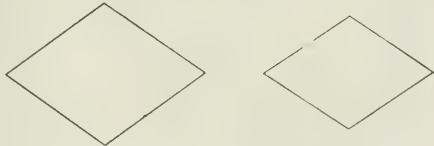
FIG. 2.

[†] This appears in the directions for examination.

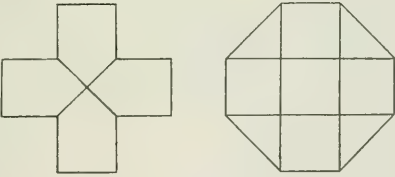
Test 18 was devised by the writers as a visual construction test, the card for which appears at the top of Fig. 3, reduced one-half. This figure likewise presents the materials for Tests 19 and 20, both of which are new as to material, old in principle.



TEST 18.



TEST 19.



A

B

TEST 20.

FIG. 3.

The full directions for the making of an adolescent point scale examination follow. They are intentionally brief and have already served their purpose as guides in a preliminary application of the scale by several experienced examiners.

BRIEF PRELIMINARY DIRECTIONS FOR USING THE ADOLESCENT-ADULT POINT SCALE.

These directions will suffice for experienced examiners only.

The scale is to be used only for individuals whose intellectual ability appears to be equal to or greater than that of the twelve-year old child.

The order of tests need not be followed strictly if good reasons for change appear.

This scale has not yet been standardized and is subject to revision. Norms are to be established.

It is desirable to keep very full records of responses, in order that the tests may be criticized, modified, and standardized.

MATERIALS.

Stop-watch.

Test 1. Three Perry pictures ("Saved," "The Music Lesson," and "The Child Handel").

Test 2. Set of five weighted cubes, 3, 6, 9, 12, and 15 grams.

Test 4. Picture of butcher shop (Healy).

Test 12. Five cards for relational test.

Test 16. Two cards for code test.

Test 18. Cards for geometrical test.

Test 19. Card for reproduction of diamonds.

Test 20. Card for memory for designs.

DIRECTIONS.

Test 1. *Response to pictures* (maximum credit, 9 points).

Three Perry pictures are to be used in this test: (a) "Saved"; (b) "The Music Lesson"; (c) "The Child Handel."

Picture (a) is placed before the subject, and the examiner says: "Please describe this picture for me as well as you can." As soon as the subject has completed the description, if interpretation has not already been given, ask: "What does it mean?"

Give credit as follows for each picture: For excellent description (at least eight features correct) give 2 points; same with correct interpretation, 3 points. For good description (four to seven features correct) give 1 point; same with correct interpretation, 2 points. For meager description (only two or three features correct), with correct interpretation, give 1 point. For simple enumeration, allow no credit.

Time for each picture, 2 minutes.

Test 2. *Comparison of weights* (maximum credit, 3 points).

Have the five weights arranged in order, so that they can be presented quickly and without trial. Then present as part (a) of the test, the weights 6 and 9 grams, saying: "Tell me, please, which is the heavier of these two blocks." Similarly, (b), present the 12- and 15-gram blocks. (c) Present the five weighted blocks, saying: "Please arrange these in order of increasing weight, the lightest at one end, the heaviest at the other."

To avoid the extreme risk of guesses, give two trials for parts (a) and (b). Give only one trial for part (c), but let the second trial for parts (a) and (b) follow part (c).

It is especially important in this test that the examiner should not suggest the lifting of the weights or any other method of comparison.

Give credit as follows: For (a) give 1 point if the weights are immediately compared by lifting and if correct judgments are given in both trials. Give no credit if a mistake is made in either trial. Likewise, for part (b) give 1 point credit for correct and immediate judgment on the basis of lifting, allowing no credit if a mistake is made in either trial. For (c), give 1 point credit if the weights are arranged

in correct order. Allow no credit if a mistake is made.

Time for (a), 30 seconds; (b) 30 seconds; (c) 1 minute.

Test 3. *Memory span for digits* (maximum credit, 5 points).

Say to the subject: "Please listen carefully and as soon as I stop, repeat just what I have said."

	TRIAL 1.	TRIAL 2.
(a)	9-2-8-7-4	6-1-8-5-3
(b)	5-8-2-7-6-9	8-4-7-3-9-2
(c)	7-2-8-3-1-6-5	1-7-4-9-5-2-6
(d)	6-9-4-1-3-8-2-7	3-8-1-5-9-4-6-2
(e)	2-9-4-7-5-8-6-3-1	4-9-2-6-7-5-1-3-8

Present the digits orally at the rate of two per second, enunciating very clearly and distinctly. If the subject fails to reproduce a given group, present the group containing the same number of digits under Trial 2. If the subject fails in this trial, proceed no further with the test; but if, instead, success is attained, present in like manner the next larger group of digits under Trial 1, and continue according to the above directions until the subject has failed in both trials for a given group of digits.

Give 1 point credit for the perfect reproduction, in either Trial 1 or Trial 2, of each of the five parts of the test.

Time, 2 minutes.

Test 4. *Suggestibility* (maximum credit 5 points).

Present the picture of a butcher shop (Healy) to the subject, with the statement: "I am going to show you a picture for ten seconds. Please look at it carefully so that you can answer some questions I shall ask about it." Allow the subject ten seconds for the examination of the picture, then remove it and ask as rapidly as possible the following twenty questions, recording the subject's responses thus: Let + indicate correct statement or resistance; —, incorrect statement or acceptance of suggestion. The questions involving suggestion are indicated by S.

1. Did you see a woman and a man?
2. Were there two children with the woman?
3. Did you see the sausages in the butcher's hand?
4. Did you notice the electric light over the counter?
5. Was there a dog in the shop?
6. Did you see the open door of the shop?
7. The woman had a basket on her arm, did she not?
8. How many oranges were in the basket?
9. Did you see the chopping block?
10. And the stool behind the butcher?
11. Were the scales hanging up?
12. Was the cash register on the counter?
13. The knife in the butcher's hand was a large one, wasn't it?

- S. 14. Did you notice the people on the street?
 15. Had the little girl bundles in her arms?
 S. 16. Was her hair-ribbon red or blue?
 17. Did you see the ice box (refrigerator) behind the butcher?
 S. 18. Was the butcher's hat black?
 19. Was the floor clean?
 S. 20. How many windows did you see?

Give 5 points' credit if all the suggestions are resisted either by correct statement or by the statement: "I don't know." Give 4 points if nine of the ten suggestions are resisted. Give 3 points if eight of the ten are resisted. Give 2 points if seven of the ten are resisted. Give 1 point if six of the ten are resisted.

Time, 15 seconds for each question.

Test 5. Memory for unrelated sentences (maximum credit, 5 points).

Say to the subject: "Now please listen very carefully, and after I stop, repeat just what I have said." Then present the following sentences in order, with almost no pause between the two sentences of a given part.

- (a) The sea is very rough. Skill comes with patience.
 (b) There are many kinds of play and work. We should always be truthful.
 (c) No one can afford to be untrue to himself. It is time for us to return.
 (d) I saw a large, black object in the sky. If he had seen the happy, young face, his heart would have melted.
 (e) As we looked across the dusty, gray plain, our eyes ached. It is not possible to acquire too many good habits of mind.

Give 1 point credit for precisely correct reproduction of each part. Give no credit if a single error is made, unless it be clearly a case of a misunderstood word. Allow only one trial.

Time, 15 seconds for each part.

Test 6. Comparison of terms (maximum credit, 6 points).

Say to the subject: "I wish you would compare as well as you can, milk and water; that is, tell all the important likenesses and differences you can think of." Similarly, present as part (b) the terms paper and iron; as part (c), the terms idleness and laziness.

Give 2 points credit for a comparison involving four or more correct and important elements in case of (a) or (b), and the essential differences in case of part (c).

Give 1 point for two or three correct and important elements in case of (a) or (b) and the correct defining of either term in case of (c).

Time, 2 minutes for each part.

Test 7. Comprehension of questions (maximum credit, 5 points).

Say: "I shall now ask you some questions. Please answer them as satisfactorily as you can."

- (a) Why is a train safer than a steamer or an aeroplane?
 (b) Why is it better to judge people by what they do rather than by what they say?
 (c) Why should we be more ready to forgive an unkind act done in anger than one done without anger?
 (d) Why should a man accused of a crime be considered innocent until he is proved guilty?
 (e) Why is honesty the best policy?

Give one point credit for correct answers or such as in your judgment show fair insight, judgment, and reasoning ability. Disagreement with the answer suggested by the form of the question should receive credit if logically supported. Differences from the conventional type of answer may indicate superiority, and should, if reasonable, receive full credit. It is important to grade closely.

Time, 2 minutes for each part.

Test 8. Definitions (maximum credit, 8 points).

Say to the subject: "I wish you to define as accurately as you can, the following words." Or, if the subject is comparatively illiterate, say: "I wish you to tell me what these words mean: (a) house; (b) door; (c) honesty; (d) conceit."

Give 2 points credit for an excellent form of definition containing the essential elements, whether or not conventional. Give 1 point credit for a definition which involves enough correct elements for the certain identification of the concept.

Time, 1 minute for each term.

Test 9. Appreciation of absurdities (maximum credit, 5 points).

Say to the subject: "I am going to read some sentences to you and I wish you to tell me what you think of them."

The examiner must be especially careful not to suggest that the sentences are foolish or absurd.

- (a) It has been found that the last car of a train is damaged most in case of an accident. It, therefore, seems best to leave off the last car.
 (b) The commissioners have resolved to build a new jail from the materials of the old jail, but they are going to keep the prisoners in the old jail until the new one is finished.
 (c) A father wrote to his son: "I enclose ten dollars. If you do not receive this letter, please send me a telegram."
 (d) A man wished to dig a pit in which to bury some rubbish. He could not decide what to do with the dirt from the pit. A friend suggested that he dig the pit large enough to hold the dirt, too.
 (e) A man claims that he has a telescope which is so powerful that when he looks at a

church five miles away, it appears so near that he can hear the organ.

Give 1 point credit for each detection and clear statement of an absurdity. Grade closely. Time, 1 minute for each part.

Test 10. Analogies (maximum credit, 6 points).

"If I should say, 'Man is to boy as woman is to —', how would you complete the sentence?" If the subject says, "girl," proceed with the next example. If not, supply the missing word. "Boat is to water as train is to —." Again give the subject an opportunity to complete the sentence, and if he is unable to do so, supply the missing word.

Having made clear the nature of the test, proceed to present in order the following six analogies:

- (a) Pocket is to coat as closet is to —.
- (b) Sun is to day as moon is to —.
- (c) Arm is to elbow as leg is to —.
- (d) Known is to unknown as present is to —.
- (e) Whole is to part as six is to —.
- (f) Sunday is to Saturday as January is to —.

Give 1 point credit for each correct response. Grade carefully and closely. Time for each part, 30 seconds.

Test 11. Association of opposites (maximum credit, 4 points).

Say to the subject: "I am going to read off a list of words, and as I read them, I wish you would give me the opposite of each word, like this: high—low; large—small; hard—soft. Now we shall begin."

Wise	Never	Busy	Generous	Many
Silent	Joy	Distant	Horrid	Rough
Similar	Prompt	Lazy	Rude	Upper
Cheap	Vacant	Easy	Top	After

Give 4 points credit for correct response to each of the twenty words. Give 3 points credit if not more than three mistakes appear. Give 2 points credit if not more than six mistakes appear. Give 1 point credit if not more than 9 mistakes appear.

Time, 3 minutes.

Test 12. Relational test (maximum credit, 8 points).

Explain thus to the subject the nature of the test: "I am going to show you a card with four lines of squares and circles on it." Then show the explanation card with the circle in each case as the first symbol at the left and ask the subject, "What is the relation of the circle to the squares on this card?" If he does not perceive that it is always the first symbol at the left, explain this relation to him. Make perfectly sure that the idea of uniform relationship, that is, the same relationship for each of the four lines, is grasped. Having thus made plain the nature of

the test, present in turn cards representing the four relations of symbols (Fig. 1).

- (a) Middle.
- (b) Second from left end.
- (c) Fourth from right end.
- (d) One place to the right of middle, or always two more squares on the left of the circle than on the right.

Give 2 points credit for each part for which the relation is discovered and correctly formulated. Give 1 point credit if the relation is so perceived that it can be reproduced in new groups of symbols, but cannot be expressed in words.

Time, 2 minutes for each part.

Test 13. Box test (maximum credit, 4 points).

"Please tell me how many boxes you would have if I gave you: (a) A large box with two smaller boxes inside of it, and inside of each of the smaller boxes, one still smaller. (b) A large box with two smaller boxes inside of it, and inside of each of the smaller boxes, two still smaller. (c) A large box with three smaller boxes inside of it, and inside of each of the smaller boxes, three still smaller. (d) A large box with four smaller boxes inside of it, and inside of each of the smaller boxes, four still smaller."

Give 1 point credit for correct response in case of each part.

Time, 1 minute for each part.

Test 14. Ingenuity (maximum credit, 7 points).

Say to the subject: "I am going to give you some practical problems. If you wish to, you may use this pencil and paper in working them out." Then present: (a) "If you were asked to get seven pints of water from a well and were given a three-pint vessel and a five-pint vessel, could you measure out exactly seven pints without guessing at the amount, if you began by filling the five-pint vessel first? You understand that you have no third vessel, but if you want to, you can throw out water."

If the subject fails to solve this problem in three minutes, explain it to him in the following way: "Fill the five-pint vessel. Then from it, fill the three-pint vessel. Now, empty the three-pint vessel. Pour the two pints remaining in the five-pint vessel into the three-pint vessel and refill the five-pint vessel. As a result, you will have precisely seven pints of water in the two vessels."

After the correct solution of (a), either by the subject or with the aid of the experimenter, present as (b): "If you were asked to get eight pints of water and were given a five-pint vessel and a seven-pint vessel, could you measure out exactly eight pints of water without guessing at the amount, if you began by filling the five-pint vessel first? (c) If you were asked to get seven pints of water and were given a four-pint vessel and a nine-pint vessel, could you measure out exactly seven pints without guessing at the

amount, if you began by filling the four-pint vessel first?"

Make sure that the problems are understood, so far as the subject is capable of understanding them.

Give 3 points credit for correct and independent solution of problem (a). Give 2 points credit for correct solution of problem (b), either with or without explanation of problem (a). Give 2 points credit for problem (c), either with or without explanation of problem (a).

Time, 3 minutes for part (a); 2 minutes for part (b); 2 minutes for part (c).

Test 15. Comparison of capital letters (maximum credit, 2 points).

Present to the subject on page 4 of the record sheet the capital letters L, H, N, I, Y, V, and M, saying: "Please look at these letters carefully and arrange them in order of the length of line which is needed to make them. You see if you straighten out the M, it would make a much longer line than the L." Make sure that the subject understands what is meant. Then give him a pencil and have him write the letters on the record sheet, in the space provided, in what he conceives to be the correct order.




Give 2 points credit for the correct order—L, L, Y, V, H, N, M. Give 1 point if either of the pairs of letters L, Y, or H, N, is reversed. Give no credit if both pairs are reversed, and no credit for anything poorer.

Time, 2 minutes.

Test 16. Code learning test (maximum credit, 6 points).

Explain the purpose and meaning of the code test by drawing the following figure and indicating to the subject the symbols for the word "nor."

j	n	k
q	o	p
m	r	l

n	o	r
		

After you are sure that the subject understands the nature of the test, say: "I am now going to show you a figure in which different letters are used. I shall let you study it for twenty seconds; that is a very short time. Please try to learn it so that you can write the symbol for each letter."

Then present the appropriate card for code (a), allow the subject twenty seconds for observation, and immediately thereafter have him reproduce the symbols for the letters as given on the record sheet under the test.

This part having been completed, present in

similar fashion the card for part (b), the number code. Allow twenty seconds for the learning of the code. Then have the subject reproduce the symbols for the digits as they appear on the record sheet.

Give 3 points credit for correct reproduction in case of each part. Give 2 points credit if one error is made. Give 1 point credit if not more than three errors are made.

Time for reproduction of each part, 1 minute.

Test 17. Ball and field (maximum credit, 2 points).

Present to the subject the broken circle on page 4 of the record sheet, saying: "If you were told that a ball had been knocked into this field and lost in the grass, and you had no notion as to the direction from which it came, or where it may have landed, how could you most quickly and easily find it? Show me on this paper what path you would follow in searching for it." Have the subject trace a path in the circle which appears on page 4 of the record sheet.

Give 2 points credit for an inward or outward spiral or for a systematic back and forth plan (straight or curved path). Give 1 point credit for concentric circles or for radii or diameters systematically followed. Give no credit for anything poorer.

Time, 2 minutes.

Test 18. Geometrical construction test (maximum credit, 4 points).

Place before the subject the geometrical construction card, saying: "Here is a drawing with a number of parts or pieces. If they are properly fitted together, they will make a square. Now please take this pencil and show me how the parts can be fitted together to just fill this square." (One of the squares on page 4 of the record sheet.)

If the subject does not get the parts properly arranged on the first attempt, allow him to try again in the second square on the record sheet.

Give 4 points credit for correct arrangement of the parts on first trial. Give 2 points credit for correct arrangement on second trial: Give 1 point credit if all parts are correctly placed, except the two triangles, in the second trial.

Time for first trial, 2 minutes; for second trial, 2 minutes.

Test 19. Reproduction of diamonds (maximum credit, 2 points).

Present squarely before the subject, with the base of the card toward him, the pair of diamonds and say: "I wish you to copy these two figures very carefully and accurately." The reproduction should be made on page 4 of the record sheet in the proper space, with a pencil. The subject should not be allowed to move the paper about.

Give 2 points credit for approximate correct-

ness in form and size. Give 1 point credit for easily identifiable reproduction of form but failure to reproduce the relative sizes.

Time, 1 minute.

Test 20. Memory for designs (maximum credit, 4 points).

Say to the subject: "I am going to show you a pair of drawings. After you have looked at them for ten seconds, I shall take them away and ask you to draw both of them from memory. Look at them very carefully." Then present for ten seconds the card bearing the two designs. Have the subject reproduce the designs with pencil in the space provided on page 4 of the record sheet.

Give 2 points credit for correct and accurate reproduction of (a) or (b). Give 1 point credit for (a) or (b) if a minor imperfection appears, such as the omission of the cross lines or their introduction in the wrong figure.

Time, 2 minutes.

GENERAL RESULTS OF APPLICATION OF SCALE.

To the following expert examiners who have generously aided us, we take pleasure in expressing our obligation and our thanks: Drs. Helen T. Woolley, Thomas H. Haines, R. H. Sylvester, Josephine N. Curtis, Mabel R. Fernald, Frederick L. Wells, Miss Rose S. Hardwick, and Mr. Willard L. Smith.

As it is our intention to use our data (both measurements and criticisms) as the basis for a revision of the scale which will be reported later, we shall present in this connection only the ranges of scores and the averages for various groups of subjects. These will serve examiners temporarily as rough norms or standards to regulate expectation.

For a group of twenty-three women in the reformatory at Bedford Hills, New York, the adult scores ranged from 14 to 61 points. The relation of these scores to the pre-adolescent scores are exhibited in Table 1.

Similarly the range for a group of thirty-three high-grade pupils in the School for the Feeble-minded at Waverley, Massachusetts, is 18 to 59 points. Few of these individuals would be in the school except for affective peculiarities and resulting delinquencies. Table 2 presents the scores for the group.

It is to be noted that the ratios of the adult score to the pre-adolescent score are nearly the same: .48:1.00 for the Bedford Hills group and .51:1.00 for the Waverley group. The conclusion indicated is that for subjects of medium to poor intelligence the adult score will be approximately one-half the pre-adolescent score.

TABLE 1.

BEDFORD HILLS GROUP (DR. FERNALD).

AGE	ADULT SCORE	PRE-ADOLESCENT SCORE
29.3	14	62
19.5	16	57
32.2	18	65
22.2	20	67

AGE	ADULT SCORE	PRE-ADOLESCENT SCORE
21.2	21	58
19	22	63
37.6	24	64
16	27	59
16.7	27	74
26.6	28	61
16.7	29	70
21.7	31	66
24.6	34	75
20.9	35	74
25.7	36	62
17.5	36	77
19.3	39	72
29.2	49	80
21	50	90
22.6	52	81
18.3	55	82
18	56	85
22	61	86

Averages for 23 cases

34

71

Adult score=.48 of pre-adolescent score.

TABLE 2.

WAVERLEY GROUP (DR. CURTIS).

AGE	ADULT SCORE	PRE-ADOLESCENT SCORE
25.3	54	80
32.8	56	82
16.7	59	84
26.7	20	62
38	18	68
19.6	26	71
30.8	27	72
26.9	27	79
19.7	52	83
20.9	28	73
24.3	28	65
28.1	29	67
25.6	32	80
18.9	32	77
23	32	70
25.3	32	69
19.6	33	72
25	36	73
23.2	40	72
25.3	40	79
24.3	40	73
17	41	74
25.8	41	84
24.5	41	73
21.8	42	79
20.6	42	77
26.7	44	89
22.3	45	89
20	47	85
17	47	83
20.7	47	86
17	49	83
18.6	54	92

Averages for 33 cases

39

77

Adult score=.51 of pre-adolescent score.

A non-selected group of fifteen grammar school pupils, aged 12.6 to 16.4 years, scored from 32 to 70 points. The numbers are not large enough to supply safe age-norms.

Twenty-five working children, aged 15 to 16 years, obtained scores from 24 to 72.

A group of eighty college students and professionally trained persons yields a range of 64 to 98 points.

The following averages supplement the ranges already given:

Average score for fifteen working children, 15 to 16 years, 45 points.

Average score for fifteen nurses, 52 points.

Average score for fifteen college students, 86 points.

Average score for fifteen physicians and teachers, 90 points.

Our results indicate that Tests 12 and 14 are unsatisfactory in their present form and should be modified for use in an adolescent-adult point scale.

REFERENCES.

- ¹ Yerkes, Robert M.: The mental life of monkeys and apes: a study of ideational behaviour. *Behaviour Monograph*, Vol. iii, No. 1, 1915.

Address.

THE TRAINED NURSE.*

By GASTON TORRANCE, M.D., BIRMINGHAM, ALA.

Surgeon to the Birmingham Infirmary.

THE establishment of training schools for nurses arose from the experience of army hospitals in European wars, especially the Crimean.

In France the nursing is chiefly in hands of the Catholic sisters. In Russia sisters of mercy have done the nursing since the Crimea; the same conditions exist in Italy. In 1883 "St. Paul's Home for trained English speaking nurses" was started in Rome by a few graduates of American and English schools.

In Germany many Protestant and Catholic systems have become famous. "The Institute of Deaconesses" was established at Kaiserswerth in 1836—in after years, Miss Nightingale completed her early training here, which made her such a successful advocate of thorough instruction in nursing.

In Vienna the nursing is done by sisters. In England, female nurses in hospitals are mentioned as early as 1760, and in 1791 they were endorsed by the governors of the London Hospital.

In 1860 a training school was founded at St. Thomas' Hospital (London) through the generosity of Miss Nightingale. The New York State Charities Aid Association made special study of this school, and it was taken as a model for Bellevue Hospital School, as well as for most of the other American schools.

In the latter part of the eighteenth century, Dr. Valentine Seaman gave a course of twenty-six lectures to the nurses of the New York hospitals, relating to nursing and hygiene. These lectures were published in 1800, and were the first recorded effort for the improved training of nurses in the United States. In Philadelphia in 1838 the Society of Friends formed a nurses' society which raised the standard of nursing and relieved the Catholic Sisterhood of doing the work alone. In 1873 training schools were

established almost simultaneously in New York, New Haven and Boston, and from this year dates the impetus to the improved nursing system which has led to the establishment of training schools in almost every city in this country.

An effort was made to raise the standard, but, as the superintendents of the training schools came from these schools, the task was a difficult one. During the World's Fair, among the many congresses held was one of trained nurses, which was a subsection of the hospital section of the Congress of Associated Charities. This was the first time in the history of nursing in America that the nurses had come together as members of the same profession. The most important result of this meeting was the organization of the "American Society of Superintendents of Training Schools for Nurses," and the progress made since this time is due chiefly to the efforts of this society. To encourage interest and enthusiasm, alumnae associations were organized. Two years later thirty-one were reported, and steps were taken to form a national association, which held its first meeting in April, 1898, as "The associated alumnae of the United States and Canada." Since this time the membership has steadily increased. The next important step was the establishment of a nursing journal, and in October, 1900—two years after the organization of the association—*The American Journal of Nursing* was started under its auspices.

Opportunities are constantly opening up by which the graduate nurse can do her share in bettering social conditions. Splendid work has been done in New York by the "Nurses' Settlement," which is located in the densely populated East Side. "It aims, in addition to nursing the sick poor, to be to the neighborhood all that the College Settlements stand for."

More and more attention is being paid to instruction in invalid dietary. In some schools a teacher is engaged in this branch alone, and the pupils take a regular four to six weeks' course of study in food constituents and the preparation and serving of infant diet. The superintendents are realizing the importance of giving more detailed and systematic teaching in the ethics of nursing—the constant observance of which is just as important to the graduate as that she should be an expert in practical work.

"The women of today have not, as a rule, a thorough, systematic, practical knowledge of the details of housekeeping so essential for one who expects to become a good nurse and a good manager in the ward."

For these nurses an attempt has been made in one school in Scotland, in one school in London, and one in the United States, to give the probationers, before entering the wards, a so-called preliminary course in household economics, in the theory of their work, and in the elements of nursing.

* Read before the 1916 graduating class of nurses of the Birmingham Infirmary.

Medical Progress.

RECENT PROGRESS IN PSYCHIATRY.

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

INSOMNIA AS A CYCLIC PSYCHOSIS.

BALLET¹ excludes from consideration the insomnia of the aged and of arteriosclerosis and autointoxication, discussing in particular a type of intermittent insomnia characterized by a dread of being unable to sleep, an actual phobia with anguish. This is accompanied by a train of symptoms including a certain depression during the day, a depression of mood, not physical, reduced inclination for work, and a tendency to be worried and distressed. The insomnia of this type comes on abruptly, complete, without known organic cause, and persists practically complete as it began. The patients are liable to relate that they have had, in the past, periods of depression or of distress or ideas of suicide. Ballet argues that these attacks of insomnia may be regarded as the manifestations of a periodical psychosis. In treatment he warns that laudanum is of little use in insomnia of this type; it is inclined to yield more readily to chloral, amylen hydrate, or hypnotics of the veronal series. Baths up to the waist at 28° C. for five minutes just before getting into bed, are often useful. He adds that we can attenuate the manifestations of a periodical psychosis and perhaps relieve the dread and insomnia, but no means are known for shortening it or postponing its recurrence.

SYPHILITIC PSYCHOSES WITH MANIC-DEPRESSIVE SYMPTOMS AND COURSE.

Barrett² says that the routine application of the Wassermann test and the study of the cerebrospinal fluid have shown that, apart from diseases of well-marked syphilitic pathology, there are cases which clinically course in ways not usual for the syphilitic types of psychoses, although showing serologically the pathologic changes of the disease.

A considerable number of cases may show positive Wassermann reaction in the blood and no pathologic condition of the cerebrospinal fluid. The majority of these are instances of more or less marked types of non-syphilitic mental disorders, which show an incidental constitutional syphilis. A smaller number are forms of syphilitic psychoses of a type other than general paralysis.

Other cases show syphilitic changes in the blood and cerebrospinal fluid similar to those found in general paralysis, but in their clinical symptoms and course seem to stand apart from this disease and present interesting points for differential diagnosis. Such are the cases which course clinically with the symptomatology and cyclothymic variations of manic-depressive in-

sanity. The occurrence of this type of case has occasionally been commented on in the treatises on general paralysis, in which they have been usually regarded as combinations of general paralysis and manic-depressive insanity.

Clinically, certain cases in their symptoms resembled common types of manic-depressive insanity in which there is no evidence of syphilis. In the majority of these, organic neurologic disturbances were not prominent. In only two cases was memory disturbance at all marked. In but one, a fatal case, was there any general mental deterioration.

It seems justifiable to regard cases of this type as coincidental occurrences of manic-depressive types of reaction, and syphilitic diseases of the type of general paralysis.

The relation between the two disorders might be made clearer if one knew how far back in the course of the disease the serologic pathology became manifest. In only one case were there any prominent neurologic disturbances, such as attacks, speech defects, ataxia or reflex abnormalities noted during the early phases of the clinical course.

In some of the cases there were signs of manic-depressive tendencies before the infection with syphilis. In two cases the first attack of manic excitement occurred a few years after the infection. It thus seems impossible to establish the infection with syphilis as the direct cause of the mental symptoms.

The question of combined psychoses has always been of interest in psychiatric discussions. This interest has lessened as the psychiatric point of view has been turning away from nosologic distinctions, and toward regarding many of the functional psychoses as individual types of reaction to personal experiences. In this way the mental symptoms are related to structural brain disturbance only so far as the latter introduces difficulties in nervous functioning and makes it possible for tendencies which have resulted from a pathologic nervous constitution, and the effects of personal experiences and mental habits, to assert themselves.

Hereditary instances of mental diseases in the families of these patients were present in seven of the nine cases.

Aside from the structural influence of a syphilitic process of the nervous system in producing disease, there is the possibility of a psychogenic mental disturbance which may develop in the individual who is confronted by the new and distressing problems which come to one who has acquired syphilis. It is not uncommon for functional and mental disturbances to occur in the early stages of syphilis, the only explanation for which are the fears consequent upon infection.

Some prognostic information may be drawn from the analysis of even the few cases cited in the article. Four of the patients, after the serologic examinations had shown the presence of a syphilitic process in the central nervous system, made improvement in their mental symptoms to

a degree that permitted them to return to their homes, and some to take up their business again in an efficient way.

ALZHEIMER'S DISEASE AND ALCOHOLISM.

Lambert³ cites two cases, both men of 49, without significant heredity or make-up, but with a history of alcoholism. In each there developed slowly and insidiously, without attacks of unconsciousness or convulsions, a most profound dementia. The onset was first evident in inattention, indifference and absent-mindedness; later became more manifest in declining efficiency, progressive impairment of memory, retention, grasp and poverty of thought, followed by aimless, restless, foolish behavior and increasing mental dilapidation which went on apace toward an apathetic dementia, incapacity in comprehension, to talk, to walk and bedfast state, in which the patient muttered and mumbled and fussed and fumbled, and pulled at his bedding, wet and soiled himself, chewed a little and gulped what was put in his mouth, and vegetated for a time, and died like a decerebrated animal. Among the more striking symptoms in these cases were the outstanding symptoms of agnosia, aphasia, and apraxia. In two other patients, one 61 and the other 71, there likewise developed gradually without cerebral irritation, apoplexy or paralytic phenomena, evidences of deterioration. In addition to the diffuse non-systemic symptoms of dementia, there stood out in the first case a diffuse aphasic or paraphasic disorder, largely of a sensory type at first, later of both a sensory and motor transcortical type. There was little motor or ideatory apraxia in this case. In the second case there was also considerable paraphasia and jargonaphasia, but more prominent were the symptoms of motor, more particularly ideatory, apraxia. There was absence of objective paralyses, although in the second case a right hemianopsia was suspected and, anatomically, properly so.

RÔLE OF HALLUCINATIONS IN PSYCHOSES.

Harrison⁴ has made a careful statistical study of 514 cases. He found that hallucinations are among the commonest of symptoms met with in the insane, occurring in approximately 40% of the cases. Of the various types, those of hearing are most frequent, these occurring either separately or combined in 90% of the cases with hallucination. Next in frequency are those of hearing and sight combined, and then come visual disturbances alone. The content of the hallucinatory percepts were not characteristic for any particular psychosis. Visual disturbances seem especially peculiar to the catatonic precox group. Hallucinations are common in dementia precox, occurring in practically all the cases. On the other hand, they are rare in the manic-depressive group, seldom, if ever, occurring typically. This fact is of diagnostic importance. Hallucinations are rare in arterio-

sclerotic dementia and senile dementia, occurring in approximately 20% of the cases. Hallucinations are rare in sane persons, even though they be of a psychopathic make-up.

ACETONE IN URINE OF ACUTELY INSANE.

In necropsy material, Mills and Wearne⁵ noted the regular appearance of casts and albumin prior to death, and post mortem they found various kidney changes, which, at least in some cases, seemed the most important pathologic finding. It, therefore, seemed that a kidney irritant or toxin was at work. The authors then found that the urine in these acute cases often contained acetone and that the acetone appeared before the casts and albumin. Treating these cases from a nephritic viewpoint was entirely unsuccessful, but from a gastro-intestinal auto-intoxication standpoint, they had very fair success. The appearance of acetone indicates a metabolic disorder, probably dependent on a gastro-intestinal condition, and also an inherent personal fault. Its appearance shows that the toxemia is reaching a stage when ill effects on the kidneys may be expected. These will be shown simultaneously, or, in a few days, by the appearance of casts and albumin, and there is apparently some danger of the kidney change becoming chronic. Patients treated along expectant and symptomatic lines died. Treatment to improve renal functions, including diuretics, stimulants, baths, packs, cathartics, rectal irrigations, hypodermoclysis, etc., failed. Alkaline treatment, such as the administration of large amounts of soda, also gave very little benefit. The treatment eventually resolved itself into: free catharsis; free washings of the lower bowel by enemas or, preferably, saline irrigations; forcing fluids as much as possible; forced feeding with skim milk and cereals, usually oatmeal gruel, and addition of either cane sugar or lactose; use of intestinal antiseptics, preferably either thymol or betanaphthol; stimulation where necessary; sponging for temperature, and other routine measures as in any serious illness.

PARESIS IN PRE-WASSERMANN DAYS.

Data are presented by Lowrey⁶ dealing with 58 cases diagnosed with more or less certainty as paresis at Danvers between May, 1898, and May, 1912 (prior to the routine use of the Wassermann test). Of 13 cases in which paresis was not excluded, 1 is a paretic and 1 remains unclassified. Of the other 11, 4 are cases of dementia precox, and the diagnoses were long ago established. Of 17 cases in which paresis was the probable diagnosis, not one is a paretic. Ten are cases of dementia precox. Of 28 cases in which paresis was thought to be certain, 8 are paretic and 2 more are probably so. Fourteen cases can definitely be classed elsewhere, and 7 are cases of dementia precox. The other four cases are not paretic, but cannot be classed. The sero-

logic investigation of cases in which paresis is suspected is an absolute requisite for establishing a correct diagnosis. Had the Wassermann and spinal fluid tests been known at the time these patients were presented for diagnosis, paresis might have been immediately excluded or confirmed. Clinical observations over a sufficient length of time will correct the diagnosis in the majority of cases, but this method has very obvious disadvantages. Lowrey points out that his study presents a basis for the conclusion that dementia precox is often extremely hard to differentiate from paresis. A case of dementia precox may present unequal pupils, exaggerated knee jerks, etc., and it is here that laboratory tests are of great aid.

MENTAL SYMPTOMS COMPLICATING ACUTE TETANUS DURING TREATMENT BY PHENOL INJECTIONS.

In the case cited by Everidge⁷ the convulsions were controlled by chloral and bromide. Whenever he was allowed to come round at all the spasms became intense. As the spasms became less severe, he was treated less energetically with hypnotics. The mental condition now began to show a marked change. He became extremely restless and passed into a state of low, muttering delirium, with visions and hallucinations—a condition closely resembling delirium tremens. From time to time he attempted to get out of bed, and had to be forcibly restrained. This lasted for five days, during which time he had incontinence of urine and feces. Chloral and bromide, which had previously quieted him, had now no effect. After four four-hourly doses of half a dram of paraldehyde, however, he settled down into a quiet sleep. After nine days the mental condition appeared normal, but on the tenth day there was a bad relapse. This lasted acutely for three days, but it was not until ten days later that the mental state again became normal.

JUVENILE DELINQUENTS.

Collin⁸ has examined large numbers of delinquent minors. He found that about 10% were grossly abnormal, epileptics, perverts, etc., while about 30% were normal and owed their delinquency to their environment. About 60% were abnormal from the physician's standpoint. Some of them showed signs of an inherited toxic-infectious taint which had interfered with their normal development in early infancy. Those in this group require treatment. These same influences affected the children in another group, but did not entail anomalies in physical development. There is not much chance for improvement by therapeutic measures in this group. In another group there were mental and physical signs of injury from some infectious disease in early childhood. The fourth and last group was composed of minors with evidence of gastro-intestinal trouble or tuberculous infiltration. Their psychic ex-

tation is closely connected with their organic condition. He says in conclusion that it is only by thus studying the past that we can appreciate the present status of the child and estimate the outlook for his future. Inversely, every anomaly of development in a child from one to three years old, and every persisting change in the character at that age, should call and hold the attention of the physician, so that rational treatment may be applied while there is still time.

ABDERHALDEN TEST.

The result of Schwartz's⁹ experience with the Abderhalden reaction in 145 sera and 22 spinal fluids from mental cases were very disappointing. They were so irregular that he concludes the method is of no use in diagnosis and of no assistance in explaining the etiology of psychoses. For example, in 38 cases of dementia precox there was absolutely no uniformity of reaction. Several male sera reacted to ovarian extract and female to testicular. The method, too, is much too complicated for clinical laboratory.

INTELLIGENCE TESTS.

Gregor¹⁰ employs the definition method in intelligence tests. Forty selected words in common usage are given to the individual, and he is asked for a definition of each. The time required, the degree of correctness of the definition and the ability of the person to express himself are observed. The method certainly has much advantage in simplicity, quickness and uniformity over any other method. The author claims for it that it is quite sufficient to disclose intellectual defect, to measure its intensity, and also to gain an insight into the mental processes of the individual and their disorders. The scheme of age measurement is not given, but can be easily arrived at. A large number of illustrations is given.

PSYCHOSES ASSOCIATED WITH PELLAGRA.

One of the most common psychoses associated with pellagra, according to Sandy,¹¹ occurring twenty-eight times in 100 cases, is the infective exhaustive psychosis. Manic-depressive insanity occurred sixteen times. There were four cases of symptomatic depression, fourteen of dementia precox, fifteen cases of senile psychosis or senile dementia, three epileptic imbeciles or idiots, three cases of constitutional inferiority with episodes of some kind, and three were not insane.

TREATMENT OF TABES AND GENERAL PARESIS.

Holland¹² declares that in spite of the progress realized in the treatment of syphilis in the last few years—possibly because of it—the physician's task is no lighter than formerly, but more responsible and with new problems to solve. Treatment of syphilis in the primary and

secondary stages must be continued until the Wassermann reaction has been negative for some time and the spinal fluid gives negative findings. The patients must be reexamined every year or so for ten years. In eighty-five cases of tabes or general paresis in his services of ninety-three cases of various other forms of cerebrospinal syphilis, since 1903, only one patient was known to have had systematic intermittent treatment through two years. In forty-nine others treatment had been exclusively symptomatic. The details of treatment were not known for the other patients. Courses of nucleinic acid, tuberculin and salvarsanized serum in tabes or general paresis proved absolutely useless. The cerebrospinal fluid usually gave a negative response finally to the four usual tests, and the symptoms from meningeal involvement retrogressed, but no improvement was apparent in the clinical picture of the tabes or paresis. The only hope, he reiterates, is to start treatment in an early stage, but when the patient becomes alarmed about his condition and applies for treatment, it is then too late for it. It is possible that certain strains of the pale spirochetæ have a special affinity for the central nervous system. This view is sustained by the cases in which tabes or paresis develop in persons infected from the same source, or in husbands and wives. He has had a few cases of this kind, but he thinks a constitutional predisposition is more likely. In one of his families, two brothers died at 43 and 48 of general paresis, and a third is insane. In another family one man of 50 died of general paresis, his brother of 41 is being treated for cerebral syphilis which developed seven years after the infection, and a third brother has tabes.

REFERENCES.

- ¹ Presse Médicale, Paris, Aug. 12, 1915, Vol. xxiii, No. 37.
- ² Jour. A. M. A., Dec. 2, 1916.
- ³ Psychiatric Bulletin, October, 1916, Vol. ix, No. 4.
- ⁴ Jour. Nerv. and Mental Dis., March, 1916, Vol. xlii, No. 3.
- ⁵ Psychiatric Bulletin, October, 1916, Vol. ix, No. 4.
- ⁶ Jour. of Nerv. and Mental Dis., April, 1916, Vol. xliii, No. 4.
- ⁷ Brit. Med. Jour., March 25, 1916, Vol. i, No. 2882.
- ⁸ Bulletin de l'Acad. de Méd., Paris, June 6, 1916, Vol. lxxv, No. 23.
- ⁹ Monatsschrift für Psych. und Neur., Vol. xxvi, No. 1.
- ¹⁰ Monatsschrift für Psych. und Neur., Vol. xxxvi, No. 1.
- ¹¹ Southern Med. Jour., June, 1916, Vol. ix, No. 6.
- ¹² Norsk Magazin for Lægevidenskaben, Christiania, Vol. lxxvii, No. 6.

Book Review.

The Treatment of Diabetes Mellitus. By ELLIOTT P. JOSLIN, M.D. Philadelphia and New York: Lea and Febiger. 1916.

It is a very pleasant task to review Dr. Joslin's book. One can have nothing but admiration for the arrangement, the method of presentation and the conciseness. The book is based on his own personal observations of over

1000 cases, and reflects the accumulated wisdom of that experience. Unlike many specialists Dr. Joslin makes his subject clear, not obscure, simple, and not difficult. While perhaps not stated in so many words, there is running through the book his mission, namely—how to instruct the medical profession to treat diabetes more effectively. He brings to the medical profession much encouragement because the introduction of the so-called "Allen Treatment of Diabetes" and the experience with that and other advances has brought about a marked improvement in the effectiveness of the treatment of diabetes. There is nothing that the internist or general practitioner might want to know concerning the treatment of diabetes that is not presented in this admirable book. The first section takes up statistical studies upon the cause and treatment of diabetes.

The second section deals with important factors in the treatment of diabetes; the third section discusses the examination of the urine, blood and respiration in diabetes. In this chapter it will be a relief to many practitioners to know that Dr. Joslin advocates as necessary only the simplest possible tests. He is not ready yet to accept the estimation of blood sugar, for example, as an indispensable part of the treatment of diabetes. In his experience he has found that the glycosuria gives an accurate index of the disease and is sufficient to control therapy.

Section four deals with the diet in health and in diabetes and inevitably makes a strong case for accurate diets based on a knowledge of food values.

Section five takes up treatment. He discusses and practically discards drugs. The relative value of all the special dietetic measures is fully elucidated. Of great interest are his views on physical exercise in diabetes. Intensely practical is his discussion of the treatment of the diabetic in impending coma and before surgical operations.

Section six is entitled "Aids in the Practical Management of Diabetic Cases" and discusses from the wealth of his own personal experience what a diabetic should know and gives actual illustrative diets and charts.

Section seven takes up foods and their composition and in addition to simplified food tables gives suggestions as to menus and recipes for special foods.

It is a noteworthy fact that Dr. Joslin has been able to compress his book into about 400 pages.

It is indeed rare that one is privileged to recommend so whole-heartedly such a book to the medical profession.

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VACANCIES IN THE MEDICAL CORPS OF THE UNITED STATES ARMY.

As a result of the reorganization of the army there are a great many vacancies in the Medical Corps and for some years to come all qualified candidates will be assured of appointment. One year of service in a hospital is required as one of the qualifications for appointment. Promotion to the grades above that of captain is likely to be much more rapid than has been the case heretofore. Accepted candidates are appointed as first lieutenants in the Medical Reserve Corps and sent to the Army Medical School in Washington for a course in military subjects. Pay begins at once at the rate of \$2000 per year, with housing, light, fuel and traveling expenses in addition. Rapid increase of pay occurs with length of service and promotion. The service offers young medical men an excellent career with a dignified social, offi-

cial and professional status; an assured income during life; opportunity to travel to distant lands; and facilities for scientific research or development along special lines.

Those who contemplate adopting the medical corps of the army as a career should make their decision at once. Since large numbers will be admitted in the next year or two, the advancement to the higher grades of those who come in first will be decidedly more rapid. Examinations for entrance to the corps will be held on May 5, June 5 and July 9.

Further information in regard to the service and application blanks may be obtained from Lieutenant-Colonel W. P. Chamberlain, Medical Corps, who will be glad to discuss the service with those interested. Colonel Chamberlain has an office at the Harvard Medical School, Building B 2, Room 322, with telephone communication, Brookline 2380. When not at this office he may be communicated with at Fort Banks, Winthrop, Mass., telephone, Winthrop 1544.

THE RÔLE OF STATE SANATORIA, COUNTY TUBERCULOSIS HOSPITALS AND MUNICIPAL TUBERCULOSIS HOSPITALS IN MASSACHUSETTS.

IN accordance with the County Tuberculosis Hospital Law, Chap. 286, Acts of 1916, passed last year, the County Commissioners all over this State, with the exception of Hampshire County, already provided with an excellent county sanatorium, are busy in selecting sites and drawing up plans and specifications for the new hospitals required by this act. When these institutions are built, the State of Massachusetts, which even now furnishes better accommodations for its consumptives than any other state in the country, will be fortunate indeed in having such ample provisions for its citizens with pulmonary tuberculosis. There has been urgent need for institutions of this kind. Whereas in the larger communities, such as Boston, Cambridge, and Worcester, a local tuberculosis hospital can be run efficiently and at the same time economically, and may be looked upon as an absolute necessity, with the smaller cities and towns the case has been different. It has proved expensive and not always efficient for a community of 15,000 to 20,000 inhabitants to maintain a local tuberculosis hospital. The County Hospital Law, providing

accommodations for a large number of such smaller communities, does away with the disadvantages which are inherent in the management and maintenance of a small institution.

When these new hospitals are built, the policy of the State of Massachusetts as far as tuberculosis is concerned will be somewhat as follows: Cities of over 50,000 inhabitants, required by law to maintain a tuberculosis hospital of their own, will be expected to care for all their advanced cases, many of their moderately advanced cases and all emergency cases, and others awaiting admission to a state or county institution. The county hospitals will care for the advanced and emergency cases coming from the smaller communities and the scattered rural districts. This will leave our state sanatoria to do the work for which they are really intended, i. e., the cure and arrest of favorable cases of consumption, and not merely segregation, which, to a large extent, is all that they are doing at present.

The State Tuberculosis Commission, in charge of the four state sanatoria at North Reading, Lakeville, Westfield and Rutland, comprising practically 1000 beds, for some time past has been endeavoring to reserve these institutions for the curable cases of consumption. This has proved to be a difficult and well nigh impossible task. The letter, presented elsewhere in this JOURNAL, which this Commission has recently sent out to boards of health, tuberculosis dispensaries and others concerning this matter, requiring a second examination of every patient shortly before his or her admission, is a further effort to endeavor to weed out those cases which do not belong in sanatoria and which should be kept in local tuberculosis hospitals, near to their homes, families and friends. It is hoped that the medical profession of this state will see the reason for this action on the part of the Commission and will give full coöperation in this matter.

A DESIRABLE SURGICAL RESEARCH MEASURE.

In the issue of the Philadelphia *Evening Telegraph* for March 24, 1917, is noted a desirable measure now pending before the legislature of Pennsylvania in the interests of surgical research. The practice of animal experimentation is officially recognized in Pennsylvania "for

the promotion of biological science and the discovery of new methods of treatment in disease and surgery." No provision has hitherto been made, however, for the ways and means by which animals may be procured for laboratory purposes. This lack of provision creates temptation to the abduction of privately owned pet animals for laboratory purposes, a situation similar to that of body snatching prior to legislative enactments for the procurement of human anatomical material. To remedy this defect a bill has been introduced in the Pennsylvania legislature providing that "duly incorporated laboratories may obtain from the public pounds any or all animals which shall remain unclaimed by the owners in such pounds after the time provided by law for the redemption of the same by their owners." Such an enactment providing for the legitimate procurement of material for animal experimentation is a desirable surgical research measure and should be of value as well in assisting to obviate the opposition of certain persons to animal experimentation.

REGISTRATION OF PHYSICIANS.

In spite of the editorial notice which appeared on page 511 of the issue of the JOURNAL for April 5, 1917, a majority of the physicians of Massachusetts failed on April 10 to register, in accordance with the requirement of the new law, with their city or town clerks. The purpose of this law is to prevent the entrance or continuance in medical practice, in any community, of unauthorized persons, calling themselves doctors. Like the Harrison and other anti-narcotic drug laws, it must be regarded as one of the apparently inevitable legislative annoyances to which legitimate and reputable physicians must be subjected in order to enable the control of disreputable persons operating under the guise of the medical profession. Duly qualified physicians who have failed to register under the new requirement are technically guilty of violation of the statute and are liable to fine. It is not expected, however, that the penalty will be enforced until after a reasonable time has elapsed. We pointed out in the JOURNAL of April 12 (page 545) that any physician whose original certificate is lost, destroyed, or otherwise unavailable, may obtain a new certified statement from the State Board of Registration in Medicine.

MEDICAL NOTES.

PUBLIC HEALTH IN NEW SOUTH WALES.—We have recently received (1917) the report of the Director-General of Public Health of New South Wales, published in 1916 by order of the legislative assembly of 1915 for the year ended December 31, 1914. It contains the usual material composing such reports, and presents a large amount of tabulated vital statistics. Several excellent colored charts represent the seasonal incidence of diphtheria, scarlet fever and typhoid. In comparing these with those of other countries, allowance must be made for the reversal of seasons in the southern hemisphere, where diphtheria reaches its maximum in May and June, and typhoid fever in March and April. The annual death rate of diphtheria has declined from 2.44 per thousand in 1886 to 0.11 in 1914. There are several full page plates of the principal hospitals in New South Wales, and several reports of investigational work on infectious diseases of animals and the prevention of typhoid fever and on tuberculosis and syphilis.

GUNSHOT WOUNDS OF THE PREGNANT UTERUS.—In the issue of the *Journal of the American Medical Association* for July 18, 1914, Dr. Lincoln Davis of Boston reported a case of gunshot wound of the pregnant uterus nearly at term, in which a living fetus was extracted at operation from the abdominal cavity. In a recent issue of *The Lancet* is quoted another similar case described by Drs. Saint, Goehlinger and Poiré.

A woman, aged 33 years, in the sixth month of pregnancy, was taken to hospital. She lived in a town behind the British lines which was daily bombarded. While seated at her window a shell exploded in the street and wounded her in the lower abdomen. She was admitted three hours later. The abdomen was distended and a reaction of "peritoneal defence" was already marked on the right side. The uterus extended two finger-breadths above the umbilicus. The position of the fetus could not be ascertained by palpation because of the pain produced by examination. There was a wound of entry a little below and to the left of the umbilicus and one of exit 9 cm. away, two finger-breadths above the left crural arch. From each wound omentum projected. On palpation it was evident that the abdominal muscles were completely divided and that between the two wounds only a bridge of skin remained. Blood was abundantly escaping from the vagina. A digital examination was not performed. The pulse was 110 and good, and the general condition satisfactory. Operation was decided on. The bridge of skin between the wounds was divided and the usual median incision for laparotomy made below the umbilicus. This, with the wound due to the injury itself, gave a large triangular flap, with its summit at the umbilicus. A wound in the fundus uteri, 5 cm. long, was found running from

the middle line downwards to the left and forwards toward the round ligament on that side."

The operation was successfully concluded and the patient recovered, but the fetus was not saved. It is not known whether other similar cases are recorded elsewhere in the literature.

WAR NOTES.

SITE OF BOSTON BASE HOSPITAL.—The Red Cross Base Hospital, which it was proposed first to establish in the Fenway, is now to occupy a part of the Common. The contribution of \$10,000 expected from the Government for its maintenance is not forthcoming, and \$25,000, necessary for its support, will be raised by popular subscription. The army can supply tents and possibly other equipment.

TWO CATHOLIC HOSPITALS FOR WAR SERVICE.—Cardinal O'Connell has offered to the United States Government the use of St. Elizabeth's Hospital in Brighton, with its entire equipment and staff, as a war hospital. The Cardinal has also made plans for the assistance of all the Catholic women of the diocese.

The services of the fifty Sisters of Charity of the Carney Hospital, South Boston, the staff of 115 nurses, and the hospital itself, have been offered to the Government for use when needed. This offer has been accepted through Dr. Leach, medical director of the navy.

RED CROSS BASE HOSPITALS IN BOSTON.—The personnel of the three Red Cross base hospitals in Boston has been selected from the staffs of the Peter Bent Brigham Hospital, the Massachusetts General Hospital and the Boston City Hospital. Dr. Harvey Cushing is director of the unit recruited from the Peter Bent Brigham Hospital and the Harvard Medical School, to be known as the Harvard Unit and officially designated as Base Hospital No. 5. Dr. Frederic A. Washburn is director of the Massachusetts General Hospital Unit, designated as No. 6, and Dr. John J. Dowling of the Boston City Hospital Unit, designated as No. 7.

Contrary to a somewhat prevalent impression, the hospitals from which these units are organized do not themselves become base hospitals. The personnel and equipment, which have been gathered by the Red Cross organization, are sent wherever they are needed in connection with military service.

Lieut. Col. J. C. R. Peabody, director of the American Red Cross Supply Depot, has equipped these three base hospitals at a cost of about \$25,000 per unit. The Boston Metropolitan Chapter, American Red Cross, furnished the bed linen and hospital garments at a cost of \$10,000 per unit. Surgical supplies have been furnished by the surgical dressings committee of the Massachusetts Branch of the National Civic Federation at a cost of \$1100 for the three units.

ORGANIZATION OF ARMY MEDICAL SERVICE.—The army medical service in time of war is made up of three zones:

Zone 1—First Aid Service, located immediately back of the trenches, from which the wounded are sent to the field dressing stations, a little further back. Next come the evacuation hospitals, where the cases are classified for transfer to hospitals in the rear.

Zone 2—Red Cross base hospitals, which are so equipped as to give the same service as the sick or wounded would receive at any large first-class civil hospital.

Zone 3—The army general and civil hospitals, which receive wounded and sick, who are transferred from the base hospitals, as they become overcrowded, and convalescents who are able to travel but require further medical treatment.

Base hospitals are purely military units, organized at the request of the medical departments of the army and navy. In both organization and equipment they are too massive and too immobile for civilian relief work.

The standard Red Cross base hospital unit for army service provides for a hospital of 500 beds. A unit is made up as follows: medical officers, 23; dentists, 2; chaplain, 1; nurses, 50; nurses' aids, 25; male administrative personnel, 50; civilian employees, 10.

The highest medical talent in the country has placed itself at the disposal of the Red Cross in the formation of these units. All the medical men enrolled are given commissions in the Army Medical Reserve Corps, and the nurses are enrolled members of the Red Cross Nursing Service, which is the reserve for the Army Nurse Corps.

CONTINUED NEED OF FUNDS FOR RED CROSS.—In announcing the completion of the \$50,000 emergency fund needed to furnish supplies for three Red Cross base hospitals organized in Boston, Mr. James Jackson states that there is a continued urgent need for funds to prepare the Red Cross to meet the demands that war will make upon it. There is a likelihood that two or more additional base hospitals will be organized in Boston, for which the Metropolitan chapter will be asked to furnish supplies.

The supplies for one of the base hospitals have already been completed and turned over to Col. J. C. R. Peabody, who is in charge of the Red Cross military supply Depot No. 1. The supplies for the other base hospitals are being completed and will be delivered in advance of the time promised, May 1. The efforts of the volunteer workers in the sewing branch will be devoted to creating a supply of hospital garments and other necessities which may be used for a new base hospital, for replenishing the stock of the base hospitals as they are used up in service or for other Red Cross relief work.

Contributions received to date bring the total up to \$53,714.23.

GERMAN CLUB OFFERS HOME.—The trustees of the New York Liederkrantz Club, an organization of more than one thousand Germans, unanimously adopted resolutions offering the club's large building at 111 East Fifty-Eighth Street for use as a military hospital in case of need.

BOSTON CHAPTER, AMERICAN RED CROSS.—The Boston Metropolitan Chapter of the American Red Cross has announced itself in readiness for full service. In addition to furnishing the supplies for the three Red Cross base hospital units organized in Boston, the Chapter has provided itself with a supply of hospital garments. The offer of Mr. and Mrs. Walter Baylies of their ballroom in their home has been accepted and will be used for the educational department, and classes in surgical dressings will be held there.

HARVARD UNIVERSITY LABORATORIES.—Harvard University has offered to the United States Government for use in the war, the Jefferson Physical Laboratory and the Crafts Memorial Laboratory. The Jefferson Laboratory is one of the best equipped in the United States. The Crafts Memorial Laboratory is devoted entirely to wireless and radio experiments, and is surmounted by lofty wireless aerials. About one thousand members of the reserve officers training corps took the April examination in military science and tactics.

FIELD HOSPITAL IN BOSTON.—A site in the Fenway, opposite the Art Museum, has been proposed for a field hospital which will provide easy access to the Harvard Medical School and Peter Bent Brigham Hospital groups of buildings. This hospital will furnish an opportunity for valuable instruction to war doctors and nurses in preparation for any national crisis. Red Cross nurses will be given a chance at such a hospital to learn the workings of a base hospital by handling the occasional cases that would be sent there. An orthopedic base hospital on the top of Parker Hill will also be established as soon as possible.

WAR RELIEF FUNDS.—On April 14 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	\$808,665.94
French Wounded Fund	217,162.31
Armenian Fund	174,119.05
French Orphanage Fund	92,489.79
Surgical Dressings Fund	82,014.47
Serbian Hospitals Fund	80,323.47
Boston Ambulance Fund	69,500.43
LaFayette Fund	26,195.03
St. George's Fund	17,283.47

BOSTON AND NEW ENGLAND.

TUBERCULOSIS HOSPITAL IN ADAMS.—Plans are being made for a tuberculosis hospital to be

erected by the town of Adams and the city of North Adams.

WESTERN MASSACHUSETTS HOMEOPATHIC MEDICAL SOCIETY.—The Homeopathic Medical Society of western Massachusetts held its annual meeting March 21 in Springfield and elected Dr. M. W. Conrow, of Springfield, president; Drs. Bina Seymour, of Springfield, and A. J. Lobdell of Winchester, N. H., vice-presidents, and Dr. E. U. Dillenback, of Springfield, secretary and treasurer.

NEW TUBERCULOSIS HOSPITAL.—The Essex County Commissioners have purchased twenty-five acres of land in Middleton, Mass., for the erection of a tuberculosis hospital.

STATE MEDICAL WORK.—Dr. Thomas F. Harrington, medical deputy commissioner of the State Board of Labor and Industries, in an address at Greenfield, Mass., is reported as saying that a great amount of cooperation existed between the employers and employees, as well as all public and private organizations, in securing observation of labor and health laws.

"During the year many new industries have arisen in the State. Several of these have dealt with the manufacture of substances connected with war supplies and have given rise to hazards to health and life of workmen that are entirely new to this country. During the year more than 40 new cases of poisoning by gases and fumes connected directly or indirectly with the manufacture of munition products have been reported, and there have been 13 deaths from these chemical compounds.

The Board created a set of rules and regulations for the prevention of these illnesses and deaths, that has resulted in practically eliminating the danger from these various processes of manufacture.

There were 116 cases of lead poisoning reported from various industries in which that chemical is used.

During the year more than 30,000 inspections and over 11,000 reinspections of different industrial establishments were carried out, and more than 12,000 orders for the correction of working conditions have been issued. Ten thousand of these orders have been complied with. Adequate toilet and washing facilities have been provided in 3344 establishments, and over 1000 establishments have been equipped with medical and surgical first-aid kits. One hundred and four minors were excluded from dusty trades and occupations extra-hazardous to minors. Four hundred and twenty-six places of dusty atmosphere have been equipped with ventilating and exhaust systems."

TUBERCULOSIS IN MASSACHUSETTS—It was stated at the recent meeting of the Massachusetts Anti-

Tuberculosis League that last year there were 5102 deaths from tuberculosis in the State and that there are probably about 30,000 persons ill with the disease. To care for these cases there are available 3351 beds, and there are needed between 5000 and 6000 beds. Dr. Eugene R. Kelley, director of the division of communicable diseases, State Department of Health, spoke of the law passed last year requiring counties to provide tuberculosis hospitals for communities under 50,000 inhabitants. He stated that the following cities with less than 50,000 inhabitants already have tuberculosis hospitals: Pittsfield, Chicopee, Fitchburg, Haverhill, Salem, Clinton, Brookline and Newburyport. And five counties, Barnstable, Hampshire, Dukes, Nantucket, and Suffolk, are exempt. Dr. Kelley said, of these five, two have hospitals, and in two the population is too small to require them to have hospitals. In Suffolk, Boston has a hospital, and the cities of Chelsea, Revere and the town of Winthrop must combine to maintain one. The county commissioners of Essex, Middlesex, Norfolk and Plymouth have already secured their sites and are planning building soon.

FIFTIETH ANNIVERSARY OF THE HARVARD DENTAL SCHOOL.—The fiftieth anniversary of the founding of the Harvard Dental School will be celebrated next November. A committee consisting of Dean Eugene H. Smith, the Administrative Board of the School, twenty members of the Harvard Dental Alumni Association, five from the Harvard Odontological Society, and three at large has been organized. The celebration will consist of addresses by men of large reputation, clinics, and social meetings.

Miscellany.

INFORMATION REGARDING THE CORRELATED ACTIVITIES OF THE COUNCIL OF NATIONAL DEFENSE AND THE ADVISORY COMMISSION, THE MEDICAL DEPARTMENTS OF GOVERNMENT AND THE COMMITTEE OF AMERICAN PHYSICIANS FOR MEDICAL PREPAREDNESS.

MEDICAL PREPAREDNESS.

UNDER existing conditions it is desirable that every physician, as well as every other loyal citizen of America, should be prepared to render active service to the Federal Government, remembering that the protection afforded by the Government has made it possible for its citizens to enjoy liberty, peace and prosperity.

The avenues through which the most effective service can be rendered by members of the medical profession have taken definite and concrete form. Briefly, the plan is that all medical activities should cooperate with the Council of National Defense.

It would seem desirable at this time to state explicitly just what the Council of National Defense and its various agencies are.

The Council of National Defense was created by Act of Congress, Aug. 29, 1916:

"SEC. 2. That a Council of National Defense is hereby established, for the coordination of industries and resources for the national security and welfare, to consist of the Secretary of War, the Secretary of the Navy, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the Secretary of Labor.

That the Council of National Defense shall nominate to the President, and the President shall appoint, an advisory commission, consisting of not more than seven persons, each of whom shall have special knowledge of some industry, public utility, or the development of some natural resource, or be otherwise specially qualified, in the opinion of the Council, for the performance of the duties herein-after provided.

That the Council of National Defense shall adopt rules and regulations for the conduct of its work, which rules and regulations shall be subject to the approval of the President, and shall provide for the work of the advisory commission to the end that the special knowledge of such commission may be developed by suitable investigation, research, and inquiry and made available in conference and report for the use of the Council; and the Council may organize subordinate bodies for its assistance in special investigations, either by the employment of experts or by the creation of committees of specially qualified persons to serve without compensation, but to direct the investigations of experts so employed."

A committee of distinguished physicians was asked to present to the President names of medical men suitable for membership on the advisory commission. Dr. Franklin H. Martin of Chicago was selected.

The following statement was issued by President Wilson on the night of Oct. 11, 1916, in announcing his appointment of the civilian advisory members of the Council of National Defense.

"The Council of National Defense has been created because the Congress has realized that the country is best prepared for war when thoroughly prepared for peace. From an economic point of view there is now very little difference between the machinery required for commercial efficiency and that required for military purposes.

"In both cases the whole industrial mechanism must be organized in the most effective way. Upon this conception of the national welfare the Council is organized in the words of the act for 'the creation of relations which will render possible in time of need the immediate concentration and utilization of the resources of the nation.'

"The organization of the Council, likewise, opens up a new and direct channel of communication and cooperation between business and scientific men and all departments of the government, and it is hoped that it will in addition become a rallying point for civic bodies working for the national defense. The Council's chief functions are:

"1. The coordination of all forms of transportation and the development of means of transportation to meet the military, industrial and commercial needs of the nation.

"2. The extension of the industrial mobilization work of the Committee on Industrial Preparedness

of the Naval Consulting Board and complete information as to our present manufacturing and producing facilities adaptable to many sided uses of modern warfare will be procured, analyzed, and made use of.

"One of the objects of the Council will be to inform American manufacturers as to the part which they can and must play in national emergency. It is empowered to establish at once and maintain through subordinate bodies of specially qualified persons an auxiliary organization composed of men of the best creative and administrative capacity, capable of mobilizing to the utmost the resources of the country.

"The personnel of the Council's advisory members, appointed without regard to party, marks the entrance of the non-partisan engineer and professional man into American governmental affairs on a wider scale than ever before. It is responsive to the increased demand for and need of business organization in public matters and for the presence there of the best specialists in their respective fields. In the present instance the time of some of the members of the Advisory Board could not be purchased. They serve the government without remuneration, efficiency being their sole object and Americanism their only motive."

As indicated above, the Council of National Defense therefore consists of six members of the Cabinet as follows:

The Secretary of War, Chairman; the Secretary of the Navy; the Secretary of the Interior; the Secretary of Agriculture; the Secretary of Commerce; the Secretary of Labor.

The Advisory Commission of the Council of National Defense consists of seven civilians appointed by the President. The members of the Advisory Commission are as follows:

Mr. Daniel Willard, President of the Baltimore and Ohio Railroad, Chairman; Mr. Hollis Godfrey, LL.D., President of Drexel Institute, Philadelphia, Pa.; Mr. Howard E. Coffin, of Detroit (who is also Chairman of the Committee on Industrial Preparedness of the Naval Consulting Board); Dr. Franklin H. Martin, of Chicago; Mr. Bernard Baruch, financier, of New York; Mr. Julius Rosenwald, Vice-president of Sears, Roebuck & Company, of Chicago; Mr. Samuel Gompers, President of the Federation of Labor.

The two bodies meet in joint session at frequent intervals for the purpose of considering problems relating to national defense.

The executive activities of the Council of National Defense are coordinated and carried out through the medium of the Director of the Council of National Defense, Mr. W. S. Gifford, and the chiefs of the various departments represented by the members of the Advisory Commission. Dr. Frank F. Simpson is chief of the Medical Section of the Council of National Defense.

THE ADVISORY COMMISSION.

The organization of the Council and of the Advisory Commission provides that each member of the Advisory Commission shall gather about himself for the most effective coordination of the activities he represents, a committee or board consisting of representatives of governmental departments on the one hand, and civilian members on the other hand.

The Medical Committee, of which Dr. Franklin H. Martin is chairman, consists of:

William C. Gorgas, Surgeon General of the U. S. Army; William C. Braisted, Surgeon General of the U. S. Navy; Rupert Blue, Surgeon General of the U. S. Public Health Service; Colonel Jefferson R. Kean, Director General of Military Relief of the American Red Cross; Dr. William H. Welch, member of the National Council of Research; Dr. William J. Mayo, Chairman of the Committee of American Physicians for Medical Preparedness; Dr. Frank F. Simpson, Chief of the Medical Section of the Council of National Defense, and Secretary of the Committee of American Physicians for Medical Preparedness.

Many medical problems which have bearing upon the national defense are considered by Dr. Martin's Committee and by the Advisory Commission and the Council of National Defense before being put into action by the governmental departments concerned.

COMMITTEE OF AMERICAN PHYSICIANS FOR MEDICAL PREPAREDNESS—ITS COMPONENT PARTS.

National and State Committees.

In April, 1916, the national committee was appointed by the joint action of the presidents of the American Medical Association, the American Surgical Association, the Congress of American Physicians and Surgeons, The Clinical Congress of Surgeons of North America, and the American College of Surgeons. To that committee was delegated the responsible duty of formulating plans whereby the civilian medical resources of the United States might be ascertained and effectively coordinated for such purposes as might be required by the Federal Government.

The national committee organized, selected a chairman and secretary and an executive committee, and appointed a state committee of nine strong men in each state of the Union.

It is the fixed policy of this committee that all presidents and secretaries of the various state medical societies shall be members of their respective state committees during their incumbency in office. From the first it was contemplated that at the proper time the organization of the committees would be perfected in each county of the country. That time has now come and county committees are being rapidly organized.

In each instance the state committees are expected to select the county committees and to supervise their formation.

Name and Personnel of County Committees.

It is the fixed policy of the Committee of American Physicians for Medical Preparedness that the various important medical interests and activities of each county shall be represented on the county committees. This is done for the purpose of coordinating the important interests and activities so that the medical profession of the nation may present a compact and effective organization for the purpose of aiding effectively in the national defense. In order that this plan may be carried out with uniformity and precision throughout the country, the various state committees have been requested to have all county committees bear the following distinguishing name, to wit, The Auxiliary Medical Defense Committee of County in State. The state committees have also been requested to

provide that the county committees shall include the following in their list of members:

1. All members of National Committee of the Committee of American Physicians for Medical Preparedness, resident in the individual county.
2. Members of the State Committee resident in or near the individual county.
3. Representatives of the U. S. Army, resident in the individual county.
4. Representatives of the U. S. Navy resident in the individual county.
5. Representatives of the U. S. Public Health Service resident in the individual county.
6. Representatives of the State Board of Medical Examiners residing in the individual County.
7. Representatives of the State or City Public Health Service.
8. Ranking medical officer of the National Guard.
9. President and Secretary of the local Medical Officers' Reserve Corps Association, if there should be such an organization.
10. Deans of medical schools.
11. President and Secretary of the County Medical Society.
12. President and Secretary of any other important medical societies.
13. Medical Director of the local Red Cross Units.
14. Other representative medical men.

Duties of County Committees.

From time to time specific duties will be assigned to the various state and county committees. These duties will be in accord with the policy of the Council of National Defense, and should be executed promptly and precisely by those who are called upon to cooperate in this manner with the Council of National Defense.

The committees will call to their assistance those who have been appointed field aides by their various state committees and such other physicians as they may desire to have cooperate with them.

Among the specific duties which the county committees are requested to perform at this time are the following:

First: That these committees cooperate with the National and State Committees of the Committee of American Physicians for Medical Preparedness in their efforts to gain needful information regarding the civilian medical resources of their own communities, and in their efforts to coordinate civilian medical activities for prompt mobilization in case of need.

Second: That they secure applicants:

- (a) For the Army Medical Corps. If the President should call the full complement of troops already authorized by Congress, the Regular Army would need about 1200 additional medical officers. If a million men should be called, a corresponding increase would be required.
- (b) For the Medical Officers' Reserve Corps. If war should come, 20,000 to 30,000 Medical Reserve officers should be enrolled.
- (c) For the Naval Medical Corps which needs about 350 additional officers.
- (d) For the Coast Defense Reserve Corps of the Navy. Several hundred high-class reserve medical officers are desired.
- (e) For the National Guard, such numbers as

may be required to bring your local National Guard to full strength.

In the preparation for national defense the first thing needed will be medical officers.

Physicians recommended for such service should be of the highest type. They should be free from suspicion of addiction to drugs or drink.

Medical officers who go to field duty should, by preference, be under the age of forty-five.

Third: That they cooperate, individually and collectively, with the medical department of the Army, Navy and Public Health Service, and with the Council of National Defense.

Fourth: That they cooperate with the Red Cross in their efforts to bring that organization to the highest point of efficiency.

COMMITTEE OF AMERICAN PHYSICIANS—ACTIVITIES ACCOMPLISHED AND IN PROGRESS.

On the twenty-sixth of April, 1916, the Executive Committee of the Committee of American Physicians tendered the services of the committee to the President of the United States. He expressed himself as being pleased with the patriotic tender of services and regretted that existing laws did not permit the acceptance by the Federal Government of gratuitous services, but stated that the matter would be referred to the Secretary of War and the Secretary of the Navy for the purpose of devising plans by which the good offices of the medical profession could be accepted and utilized to best effect by the Federal Government. He further stated that the plans would be referred to the Committee of American Physicians for comments and suggestions. The Executive Committee was permitted to make suggestions regarding the bill creating the Council of National Defense.

During the last year this Committee and its various subsidiary bodies have been actively engaged in formulating and carrying out various activities in conformity with the general plans for national defense, which have been undertaken by the Federal Government.

The splendid work done by the various state and other committees was of such extent and value that the Council of National Defense at its first meeting requested the Committee of American Physicians to continue their various activities under the guidance of the Council of National Defense, and asked the Secretary of the Committee of American Physicians to act as chief of the Medical Section of the Council of National Defense. Since that time the various activities have gone forward with renewed energy.

Some of the activities which have either been completed or are well under way, follow:

1st. Some 20,000 medical men selected from all parts of the country have been classified according to the training and the kinds of work which they do best.

2nd. An inventory of hospitals and other medical institutions is well under way.

3rd. It has been the fixed policy of the Committee of American Physicians to aid the American Red Cross in bringing its medical department to the highest point of efficiency. With that object in view, and in order to foster the spirit of cooperation, the members of the National Committee of the Committee of American Physicians accepted invitations to become members of the national committee of the medical department of the American Red

Cross. In order further to promote the harmonious cooperation of the two organizations, most of the members of the various state committees of the Committee of American Physicians were also made members of the state committees of the American Red Cross. The various county committees will also be expected to cooperate in carrying out the plans of the two organizations.

4th. The establishment of military training for senior medical students in a large percentage of the high grade medical schools of the country.

5th. The establishment of more effective military training for hospital groups for members of the Medical Officers Reserve Corps, for dental students, and others.

6th. The appointment of a Committee for the Standardization of Medical and Surgical Supplies and Equipment. The purpose of this work is to designate a list of articles essential to the successful conduct of civilian and military medical and surgical activities so that in the event that it should become necessary to curtail production, all of the energies of the drug and instrument makers would be devoted to necessary articles rather than to those which are desirable but not essential. On this Standardization Committee are representatives of the Army, the Navy, the Public Health Service, the Red Cross, the Council of National Defense and a number of the most distinguished members of the various specialties of civilian medicine. In their work of coordination and standardization this Committee will take council with the manufacturers of the various supplies under consideration.

7th. Much valuable information supplied by medical and other observers who have worked in the war zones of Europe is being gathered and classified.

8th. The Presidents of important national medical organizations of the country have been requested to suggest to the medical section of the Council of National Defense the kinds of work which members of those organizations are best fitted to perform, and to suggest plans whereby their activities and resources might be utilized to best advantage. This request does not contemplate an inventory and organization of these resources. The purpose is that having received suggestions offered by the various organizations, those suggestions will be maturely considered and such as conform to the plans of the Council of National Defense and can be utilized to advantage, will be adopted. The various organizations will, in that case, be requested to cooperate fully and promptly in perfecting the plans of the Council of National Defense.

The foregoing memorandum embodies only a very small percentage of the problems now under consideration. It is neither wise nor desirable, however, to present them in detail at this time.

Correspondence.

REEXAMINATION OF TUBERCULATES.

Boston, April 4, 1917.

Mr. Editor:

As you are aware, the waiting list for patients applying for admission to our state sanatoria at North Reading, Lakeville, Westfield and Rutland, is usually a very long one. It is manifest, therefore, that the condition of many patients at the time a vacancy occurs for said patient may differ radically from his

condition as stated on the application blank. In order, therefore, to help reserve the Rutland Sanatorium for really incipient and favorable cases, and to help in making the North Reading, Lakeville and Westfield Sanatoria real sanatoria in fact as well as in name, by preventing the admission of far advanced and progressive cases, this Board, at its last meeting, held March 6, 1917, passed the following vote:

Voted, That a second examination of every patient applying for admission to one of the Massachusetts State Sanatoria be required after the receipt of the "First Notice" that the patient's name is nearing the head of the waiting list, and that a report of said examination be sent to the office of the Board of Trustees by the patient's physician, before a second notice is sent and the patient definitely assigned to a sanatorium; with the following exception, that no such re-examination is required in the case of patients whose names are reached within one month of the time of filing the application.

The Board feels very sure that you will see the wisdom of this regulation and earnestly asks your co-operation in seeing that such re-examinations are made of patients under your care and supervision. It is only in this way that our state institutions for consumptives can be made to fill their real purpose, as sanatoria for favorable and curable cases of pulmonary tuberculosis.

Very truly yours,

JOHN B. HAWES, 2d, *Secretary*.

NOTICE.

UNITED STATES CIVIL-SERVICE EXAMINATION.

ASSISTANT CURATOR, DIVISION OF MEDICINE (MALE).

The United States Civil Service Commission announces an open competitive examination for assistant curator, Division of Medicine, for men only, on May 2, 1917. A vacancy in the National Museum, Washington, D. C., at a salary ranging from \$1,500 to \$1,800 a year, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Certification for filling the higher salaried positions is made only from those attaining the highest average percentages in the examination.

The duties of this position will be the identification, classification, and labeling the specimens exemplifying (a) the history of medicine, (b) materia medica, (c) pharmacy, (d) public hygiene, and the planning and installation of exhibits illustrating these groups.

Statements as to education and experience are accepted subject to verification.

Applicants must not have reached their fortieth birthday on the date of the examination.

Applicants must be examined in the State or Territory in which they reside and have been actually domiciled in such State or Territory for at least one year previous to the examination. The county officer's certificate in the application form must be executed.

Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all male citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications should be properly executed, excluding the medical certificate, and filed with the Commission at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination as given at the head of this announcement should be stated in the application form.

APPOINTMENTS.

DR. FRED BAILEY has been appointed to fill the vacancy made by Dr. David D. Brough's appointment to Deputy Health Commissioner of the City of Boston.

DR. WILLIAM R. OHLER has been appointed to succeed Dr. C. L. Overlander, recently resigned from the pathological division of the Boston City Hospital.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The annual meeting will be held at the Boston Medical Library, 8 The Fenway, on Wednesday, April 25, 1917, at 8.15 P.M.

Business: Reports of the Officers and Committees of the Society.

Election of Officers.

Incidental Business.

The paper of the evening will be by Dr. Frederick C. Shattuck and Dr. Charles H. Lawrence, Jr., "Pneumonia at the Massachusetts General Hospital from 1889 to 1917" (illustrated by lantern slides).

Refreshments after the meeting.

PAUL THORNDIKE, M.D., *President*.

DAVID CHEEVER, M.D., *Secretary*.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-ninth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, April 27, 1917, at 8.15 P.M.

The following papers will be read:

1. Treatment of Eczema.

Charles J. White, M.D., Boston.

2. Mechanisms of Defense and Serum Treatment of Poliomyelitis.

Harold L. Amoss, M.D., New York.

Discussion opened by Eugene R. Kelley, M.D., Boston. Francis W. Peabody, M.D., Boston, and Edwin H. Place, M.D., Boston.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*.

RICHARD M. SMITH, M.D., *Secretary*.

SUFFOLK DISTRICT MEDICAL SOCIETY. CENSORS' EXAMINATION.—The Censors of Suffolk District will meet to examine candidates for admission to the Massachusetts Medical Society at the Boston Medical Library on Thursday, May 10, 1917, at 4 P.M. Candidates, who must be residents of Suffolk District or non-residents of Massachusetts, should make personal application to the secretary, and present evidence of their graduation from a recognized medical school at least three days before the examination.

For further particulars apply, between 4 and 5 P.M. (except Saturdays and Sundays), to

DAVID CHEEVER, M.D., *Secretary*.

355 Marlborough Street, Boston.

RECENT DEATHS.

EDWARD TOBEY TUCKER, M.D., a retired Fellow of the Massachusetts Medical Society, died at his home in New Bedford, April 10, 1917. He was born in that city Sept. 29, 1849, was a graduate of Brown University, 1871, and Harvard Medical School, 1874.

GEORGE H. CODDING, M.D., of Dover Plains, N. Y., who died on March 6, was born in Great Barrington, Mass., 63 years ago. He was graduated from the Medical College of New York, and had lived and practised at Amenia, N. Y., until about fifteen months ago, when his health failed. He is survived by his widow and one son.

GUSTAVUS CLARK KILGORE, M.D., who died very suddenly at his home on Primrose Hill, Belfast, Me., on March 29, was born in Smithfield, Me., in 1850. He received his degree of Doctor of Medicine at the University of Vermont in 1880. He is survived by his wife.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

April 26, 1917

NEW ENGLAND SURGICAL SOCIETY

COMPARATIVE RESULTS IN SUPRAPUBIC AND PERINEAL PROSTATECTOMIES. <i>By John Martin Gile, M.D., Hanover, N. H.</i>	589
A METHOD OF SUPPORTING THE BLADDER IN CERTAIN CASES OF CYSTOCELE. <i>By Herbert L. Smith, M.D., Nashua, N. H.</i>	591
DIAGNOSIS OF EXTRAUTERINE PREGNANCY. <i>By Garry De N. Hough, M.D., New Bedford, Mass.</i>	593
EXTRAUTERINE PREGNANCY. <i>By Ralph H. Seelye, M.D., Springfield, Mass.</i>	595

ORIGINAL ARTICLES

VARIATIONS IN PULMONARY RESONANCE. <i>By George C. Shattuck, M.D., Boston.</i>	599
VARIATIONS IN PULMONARY VOICE SOUNDS. <i>By William Duncan Reid, M.D., Newton, Mass.</i>	601

MEDICAL PROGRESS

RECENT PROGRESS IN PHYSIOLOGY. <i>By P. G. Stiles, Ph.D., Cambridge, Mass.</i>	603
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HARVARD MEDICAL SCHOOL

SYLLABUS OF LECTURES ON MILITARY MEDICINE.....	607
SYLLABUS OF LECTURES ON NAVAL MEDICINE AND HYGIENE.....	611

EDITORIALS

THE MASSACHUSETTS GENERAL HOSPITAL.....	613
THE CENTRAL CONTROL OF REFLEX ACTION.....	614
PREPARATION IN MILITARY AND NAVAL MEDICINE.....	615
CARD CATALOG OF MASSACHUSETTS PHYSICIANS.....	615
MEDICAL NOTES.....	616

MISCELLANY

COUNCIL OF NATIONAL DEFENSE.....	618
NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.....	620

New England Surgical Society.

COMPARATIVE RESULTS IN SUPRAPUBIC AND PERINEAL PROSTATECTOMIES.*

BY JOHN MARTIN GILE, M.D., HANOVER, N.H.

PROBABLY no operative procedure that has in recent years come into the field of surgery gives greater improvement, with practice, in its mortality results than does that of removal of the prostate. Hence, in giving one's statistics in this disease, it should be noted whether it is the first 50%, the last 50%, or all operations performed that are being recorded. It is, then, proper for me to state that the following figures include all my operations up to the present time.

In making this report of operations for the removal of the prostate, it must be clearly understood that I do not write as a genito-urinary specialist, but simply as a country surgeon, who, through force of circumstance of location, has been obliged to do the operation for such cases as were not able to secure more highly skilled aid. I realize that the number of cases that I shall report is so pitifully small that I cannot claim great value for conclusions drawn. I have doubtless missed many fine points in procedure, and have arrived at such results as I have secured by more or less bungling and individual methods.

The total number of cases operated on is 62. Of these, 24 were performed by the suprapubic route and 38 by the perineal. Among the 24

* Read at the inaugural meeting of the New England Surgical Society, Boston, Oct. 6, 1916.

suprapubic operations there were 11 deaths; in the 38 perineal operations there were four deaths; a total of practically 24% of fatalities for all operations, and a fatality of nearly 46% in the suprapubic cases and 10 1/6% for the 38 perineal cases.

Of course, the obvious answer of those who advocate the suprapubic route is that I do not know how to do that operation, and modestly forbids me from replying that I do. In my earlier operations this was the method of choice, as it seemed to me better surgery and the more visible procedure, but discouraged by my results, I turned to the perineal course. My first impression, however, of the advantages of the suprapubic route remained so strong that I later did two more series of cases suprapubically, and though the results improved as compared with the first series, they were still far below that of the perineal cases, with the result that I am now so firmly convinced of the advantages of the perineal route, so far as my own operating is concerned, that nothing but a very exceptional case would make me willing to return to the suprapubic procedure.

Functional Results. Of the 47 cases that recovered, there were 42 perfect functional results. Of the five imperfect functional results one had a permanent abdominal sinus, this, of course, being a case of suprapubic operation. Two other suprapubic cases required secondary operation for closure of abdominal sinus, this procedure giving final perfect result, and so are classed with the 42 functional cures. Of the five imperfect results, two had slight, but permanent, perineal sinuses, leaking occurring only at time

of urination. Both, however, were in cases of malignant disease of the prostate. One had rectal fistula, this also a malignant case. One perineal case at last report had a partial incontinence of urine, and this was the only non-malignant case of the perineal series that failed of perfect functional result.

Complications. In the entire series there were six malignant cases, and in all these, I believe, there was recurrence of the malignancy, although several lived for some years and died of some intercurrent disease. Of the three perineal malignant cases, two, as noted above, had permanent perineal sinus and one a permanent rectal fistula. One suprapubic malignant case made temporary perfect functional recovery but died of bladder recurrence. Two cases were complicated by stone in the bladder, and one case was followed by stone in the bladder, which was removed three months later. This case was done by the perineal route, and I am not absolutely certain that the stone was not present at the time of the first operation; perhaps one argument against the perineal procedure, but careful sounding ought always to rule out this danger. One case had non-malignant polyp of the bladder and one had widespread malignancy of the bladder, but this, curiously enough, made temporary normal recovery from the operation.

Incidence of Convalescence. In the cases that recovered there were two—one perineal and one suprapubic—that suffered with pretty severe infection following the operation. One perineal case had a severe hemorrhage into the bladder, the blood clotting and giving much difficulty in emptying it, but made final complete recovery. One perineal case had extensive scrotal infiltration with urine, which persisted for some weeks. One had late stricture, which was permanently relieved by passing sounds. Two cases in the course of recovery developed orchitis of brief duration.

Causes of Fatalities. In the cases of death I sometimes found it difficult to give the immediate cause, and I suspect that in most of the cases of death following the operation, a combination of arteriosclerosis, kidneys, and the general failure of function of old age would have to be grouped to state the whole case. Of the 15 cases of death in my records, two are put down as from exhaustion, an unsatisfactory and even unacceptable statement, and I suspect the combination alluded to above would more nearly state the fact. One died of pulmonary embolism forty days after operation, but having a sinus not quite healed. This was a perineal case, and perhaps I could fairly place it among the recovery cases, in view of the lateness of the event that caused death. I have, however, classed it with the four cases of death in the perineal operation. Two died of suppression of urine and resulting uremia. Three died of mixed pyogenic infections and one of tetanus. Three died promptly after operation, and are credited to

surgical shock; these three were suprapubic operations. One died of hemorrhage a week after operation—a suprapubic case. One, a perineal case, appeared to die of dynamic ileus or intestinal stasis. This case was operated on in a hospital away from home, and was not under my later observation, and I suspect that the condition of the kidneys was an important factor in the death. One case died of a persistent vomiting that came on ten days after operation, and the whole clinical picture was that of cancer of the stomach with pyloric stenosis. The operative area was free from infection and apparently doing well in every way and the action of the kidneys unimpaired. No autopsy was secured, hence I cannot verify the suspected diagnosis of cancer, and have classed the case among those of death from operation. It was a perineal case, and should I give myself the advantage of the doubt in this and the case of late embolism, my operations by this method would show $5\frac{1}{4}\%$ fatality.

Age Incidence. The age incidence of the disease in the cases operated on was as follows: 1 between 30 and 40, 10 between 50 and 60, 35 between 60 and 70, 15 between 70 and 80, and 1 between 80 and 90.

Age did not appear to have much influence in the question of recovery. Of the cases operated on between 50 and 60, there was a fatality of 33%; of the cases operated on between 60 and 70, a fatality of 17%; of those operated on between 70 and 80, a fatality of $26\frac{2}{3}\%$; while the one operated on between 80 and 90 made recovery. I should feel, however, that the numbers were so small that no valid conclusion could be arrived at in regard to age danger.

Time of Healing. The average time for complete healing of all cases was 28 days, excluding the four cases that had permanent sinus or fistula, and three of these, as stated above, were malignant. The quickest complete closure occurred in 11 days, and was a suprapubic operation. The longest that healed without secondary operation was 52 days and was also a suprapubic operation. The average time of healing in the two methods of operations was practically identical.

All cases were operated under general ether anesthesia. The point of opening the urethra has seemed to me to be of little consequence, since its only object is to allow of the introduction of a tractor, with which to draw the prostate within operative reach. For drainage in the perineal route in my earlier cases I used a double tube through the perineal opening, but more recently have used a single tube through the perineum and a catheter through the urethra, and until any oozing of blood has ceased, I have kept a constant slight flow of saline solution passing in through the catheter and out from the perineal tube, thus avoiding the danger that I once early encountered, of having blood collect in the blad-

der. A moderately firm gauze pack is also used around the tube in the perineal incision.

The selection of cases for operation has depended more on the need of the patient than on the favorable or unfavorable condition of the case. In other words, infection of the bladder, pain and discomfort on the part of the patient or the impossibility of voluntary or catheter emptying of the bladder have been the indications that have most often determined operation. Hence, I assume that I have not operated on an unusually favorable group. To follow rigidly any test of kidney efficiency will, it seems to me, rule out of the operative class considerable numbers of favorable cases, whereas where kidney efficiency by test seems good, the case may for other reasons be a most unfavorable one. In general, any active process of nephritis appears to be the most important contraindication. The average of 28 days for healing the sinus appears rather long, and this time may be due to some failure in my technic. On the other hand, when the size of the pocket is considered that is left by the removal of the prostate I do not know that this is an unusually long time for its granulation.

It would be unwise to attempt to draw any absolute conclusion from so small a series of cases. Any aptness that I have is evidently for the perineal route, and without attempting to make further deductions than those already implied, I will leave these statistics for your consideration and criticism.

DISCUSSION.

DR. JOHN H. CUNNINGHAM, JR., BOSTON. - I have listened to Dr. Gile's paper with much interest and can understand perfectly the type of patient which has come under his care, and feel that he should not be disturbed at his mortality under the circumstances. What must be clearly appreciated in connection with prostatic patients is that they are elderly persons, past the prime of life, who suffer not only from the results of changes in the urinary system dependent upon the obstruction to the outflow of urine, but that there are usually other important degenerative changes in all body tissues, especially in the circulatory and respiratory systems, which impair the resistant power of the individuals and render them poor surgical risks.

Having been interested in the subject of prostatic surgery for many years, I have come to the conclusion that it is more difficult to appreciate the patient's general condition than it is to have a complete and accurate knowledge of the urinary system. It is a relatively simple matter to gain an accurate knowledge of the local condition by the exact procedure of urinalysis, cystoscopy, renal function test, roentgenology, etc., and to estimate with precision the nature of the prostatic obstruction, and the vesical and renal changes dependent upon it. It is far more difficult to estimate the degenerative changes in the general condition of the patient, even by employing the more recent tests of estimating metabolic changes.

Pre-operative study, both local and general, and the employment of pre-operative measures prior to

operation to improve the reserve power of the individual patient, is the most important advance which has been made in prostatic surgery. It is the employment of these pre-operative features that has led me to the conclusion that there is no one operation applicable to all cases, and the day has passed when we shall continue to vacillate between the suprapubic and perineal routes through the domineering personality of individuals who have acquired perfection in the technical performance of any special operation. Personally I have come to classify prostatic patients according to their general condition, rather than by the prostatic obstruction, in the consideration of the proper operation for the individual patient. As the Doctor has pointed out, his mortality is lower by the perineal route than by the suprapubic. It has long been established that the perineal route is much safer than the suprapubic. There is no advantage in the suprapubic route over the perineal, except that there is a better average functional result. Speaking broadly, the perineal results are not so good, yet on the other hand, there are those who are especially skilled in the performance of the perineal operation who will have quite as good functional results and a much lower mortality.

Pre-operative preparation of the patient's general condition by appropriate general treatment and improvement in the urinary system by bladder drainage, either by the urethra or suprapubic cystotomy, whereby local infection and renal impairment is improved, has lessened the mortality in both the suprapubic and perineal operations, yet the suprapubic route still carries the higher mortality.

For my own part I have chosen to employ the suprapubic operation in the group of cases in which the general condition of the patient shows no serious impairment and the kidneys have been proven not to be seriously damaged. This group forms the better class of prostatic patients and we may impose a greater operative tax upon them with safety for the purpose of obtaining a better average functional result. The group which does not come up to a certain standard are operative by the perineal route because the operative tax imposed is the least of all radical methods.

There is still another group in which the general condition will not allow the employment of any radical procedure, in which we must do something to relieve the distress dependent upon the urinary obstruction. Certain patients in this group may be subjected to the galvano-cautery operation of Bottini or the so-called punch operation done under local anesthesia, which procedures are often followed by excellent results. There still remain patients in this group in which the type of obstruction renders these operations of no value. These patients had best have a permanent suprapubic cystotomy for the remainder of their days, unless it is possible for the individual to carry out regular catheterization under approved conditions.

As I have briefly indicated, it is my opinion that it is the pre-operative study and improvement of the individual patient's general and local condition, and the estimation of the individual's vital forces which is to become the fundamental basis upon which operative procedure must be based; and, according to the finding, one comes to believe that there is no one operation suitable for all prostatic patients, and that we will learn to choose the particular operation best suited for the individual case.

DR. FREDERICK B. SWEET, Springfield: With Dr. Cousins, I feel very grateful to Dr. Gile. I had begun to feel that I was the only surgeon who ever lost a prostate case. My experience as to method of procedure has differed from that of Dr. Gile. I began with the suprapubic route, then for a time did the perineal operation, and three years ago went back to the suprapubic.

My chief reasons for abandoning the perineal operation were its higher mortality, more frequent distressing late complications, and especially because so large a percentage of cases who had filthy bladders continued to suffer from them afterwards, necessitating secondary operation or other treatment. Since returning to the suprapubic method, I have been doing the two-stage operation after the technic of Pilcher. You are all familiar with it and his reasons therefor.

Cystotomy with the tying in of Pezzar catheter under local anesthesia; a delay while the kidneys recover from the effects of the decompression and the bladder cleans up; the removal of the prostate as the final step.

One is often strongly impressed by the very great subsidence of the congestion in the prostate and bladder at the time of the second operation. There is also generally much less hemorrhage incident to the removal of the gland than when the operation is completed at one sitting. My own operative mortality in this condition has been cut in half by the two-stage procedure.

DR. JOHN W. KEEFE, Providence, R. I.: With reference to the removal of the prostate, I believe that we should not say that we will do only suprapubic operations, or say that the perineal route alone is sufficient. I think there are types of prostates that should be removed by one method and types by another method. If the tuberosities of the ischium are far apart, Young's operation may be the choice, especially if you find that the prostate has a tendency to bulge toward the rectum. Where we are dealing with a large middle lobe, with a tendency to enlarge toward the interior of the bladder, the suprapubic route would be the one of election. (Illustrations on blackboard.) With this type of case you are working at a great distance from the perineum, hence the suprapubic, then, would be far preferable. During the last two or three years I have employed the suprapubic route more frequently than the perineal. I believe that the two-stage operation accomplishes a number of things. We can do the suprapubic operation with the use of novocain and adrenalin, thus avoiding a general anesthetic. I believe that the blood pressure amounts to very little. The sulphonephthalin test we have laid too great stress upon. The general appearance of the patient is better than any laboratory test. If a man has a dry brown tongue and an anxious countenance, wait and see if his condition will improve. Under novocain anesthesia, make a suprapubic opening in the bladder and place a Pezzar catheter so as to drain this viscus. When we make a wound in an individual there is a reaction, and in these cases we have the reaction following the suprapubic operation; I believe the patient is immunized to a degree,—immunized if we wait ten days or a week before attempting the operation for the removal of the prostate. The patient has but little disturbance. At the second operation, you have merely a sinus in the bladder; by

pressure you can enlarge that and enucleate the prostate. It can be readily done with the finger, without shock to the patient.

The prostate reduces in size from the time of the primary operation during the ten days to five weeks of drainage.

The two-stage suprapubic operation has proven to be one of great value.

DR. STEPHEN A. MAHONEY, Holyoke: My experience with prostatectomy has been a little bit stormy. I started off by the perineal route, and after several years of that method I thought I was fairly skillful, and was unfortunate to go to Baltimore and watch Dr. Young. His operation seemed so simple. When you try to do it yourself it is different. The only difference was that the anatomical structure that Dr. Young brought out so clearly did not appear in your operations at all. After doing his operation, with 50% mortality, I dropped the method. In two emergency cases I started in by doing the suprapubic operation. I had to do a suprapubic cystotomy. After I got the bladder cleaned up, I went through the suprapubic opening and did the suprapubic prostatectomy. They were such poor risks, but with recovery so smooth, that since then I have been doing the suprapubic operation almost entirely. I think the mortality by the suprapubic is decidedly better. The only bad result I have seen was a case operated upon in a neighboring city, leaving a resulting suprapubic sinus of eight months' duration, that cleaned up by doing a meatotomy and dilating the stricture, thereby letting larger sounds into the bladder.

CONCLUSION OF DISCUSSION.

DR. GILE: The cases of very great discomfort are usually also the cases of the greatest danger, either with or without operation—a danger that often appears to be pretty evenly balanced. In such cases, I believe we are under the definite obligation of operating for relief, even though a chance of raising our average of fatality is more than even. Unless we look over our records in any operation that we have been doing over a considerable series of years, our mere guess as to the per cent. of fatality we have had is not of much value. In this particular operation, until I reviewed my cases I had no idea that my results were so bad in the suprapubic operations, and should guess that they were rather worse than they proved to be in the perineal.

I should be glad to know of the results secured by accurate computation on the part of those who have done both operations an approximately equal number of times. I realize that I have laid myself open to criticism in stating that the point of entry into the urethra seemed to be of little importance. I can support it simply by saying that where difficulty was found in dissecting back to the recognized point of election, I have several times opened this canal farther forward, and those particular cases have made as favorable recovery as others.

A METHOD OF SUPPORTING THE BLADDER IN CERTAIN CASES OF CYSTOCELE.*

By HERBERT L. SMITH, M.D., NASHUA, N. H.

THE procedure to be described—I should hardly dignify it with the name of operation—is a very simple method of supporting the bladder in certain selected cases of cystocele. The principle is, indeed, so very simple, in fact so almost absurdly obvious, that when it first suggested itself to me in the course of an operation, I could not believe it had not been used before; even now, although I have found no reference to such a technic, either in the text-books or such articles as I have been able to consult, and although all the operators with whom I have discussed the matter have said that it was as new to them as it was to me, I still think it must have occurred to some one long ago. Perhaps some of you may be able to inform me that the method has already been tried out and found wanting. However, as the results, though too few in number and too recent in date to permit of positive assurance, have in a certain restricted class of cases given me much satisfaction, I have felt it proper to offer you the suggestion for what it may be worth.

The method consists, in a word, in attaching the uterus to the posterior-inferior surface of the bladder, the cervix being sutured firmly to the posterior wall of the urethra, just above and behind the meatus. By this manoeuvre the bladder pouch is tucked up into the pelvis, and the bladder as a whole rests upon the anterior wall of the uterus as upon a shelf—just as it does upon the posterior wall of the uterus in the interposition operation. (See fig. 3.)

The first and obvious criticism of such a utilization of the uterus as a support for the bladder would be the fact that, in so doing, the uterus would be carried out of its normal plane, and that the disadvantages attendant upon the resulting retroversion would offset any good effects upon the cystocele. The answer to this is, I suggest, that in the rather restricted class of cases to which I should consider the operation applicable, this retroversion would either not be possible or could be entirely disregarded.

I first employed the method about eight months ago in an elderly woman who had already undergone an abdominal operation with fixation of the uterus, but who suffered much from a cystocele, which the operation had not relieved. She declined any extensive procedure, and I decided to give her as much relief as possible by a plicating operation upon the anterior vaginal wall. After the bladder pouch had been dissected free, it occurred to me that, instead of bringing the parts together laterally, making a line of sutures running lengthwise of the vagina, it would be easy to bring the cervix forward and attach it close up to and behind the



FIG. 1. Showing denudation of cervix and cystocele, and sutures applied through edge of triangular ligament which has been dissected free. Silkworm gut has been used by the author, and no uniform method of placing the sutures has been followed, but care has been taken to get a good bite through the dense structures of both cervix and ligament.

urethral meatus, then suturing the mucous membrane on each side, the line of closure running out laterally from the cervix across the vagina. By this means the bladder protrusion was tucked up nicely out of sight so that the cystocele area and base of the bladder rested upon the uterus. (See fig. 2.) The result was, and has

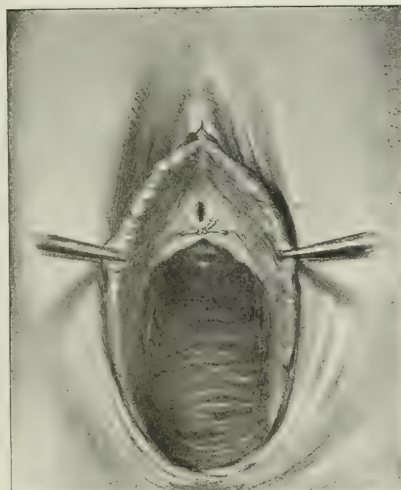


FIG. 2. Showing position of cervix after tying sutures. In some cases the cervix has been amputated as a preliminary step.

*Read at the inaugural meeting of the New England Surgical Society, Boston, Oct. 6, 1916.

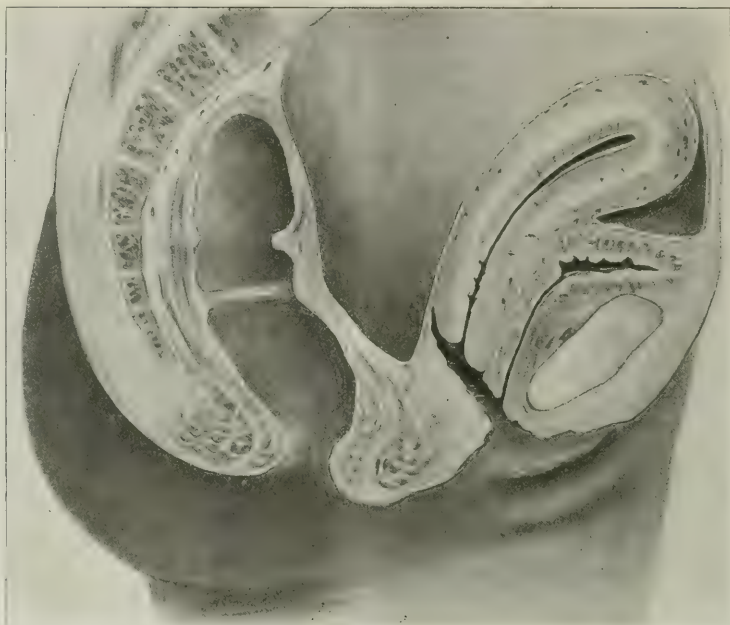


FIG. 3. Showing obliteration of pouch between anterior lip of the cervix and bladder. In this illustration the fundus is supposed to have been suspended or fixed to the anterior abdominal wall.

remained, perfectly satisfactory to the patient and operator, all symptoms being entirely relieved. In two other cases, similar to this, where a previous abdominal operation, with one form or another of fundus support, had not cured the cystocele, the same procedure has given equally good results.

The outcome of these cases was so entirely satisfactory that I have ventured to fix the uterine cervix in the way described as a preliminary step in certain selected cases of abdominal pelvic operations. In one case of a large fibroid uterus, with an unusually large bladder hernia, where supravaginal hysterectomy was done, it was found that the cervix, attached as it was to the bladder, pulled that organ well up into the pelvis when the round ligaments were attached to the stump. Today, seven months later, the conditions are absolutely perfect and the relief complete.

I have now performed the operation eight times. Two of these are recent. The others have been seen or heard from after periods ranging from five to eight months. None show the slightest tendency to recurrence of the bladder pouch—in fact, judging from the present position of the organs, and of the unyielding nature of the tissues on which the bladder rests, I cannot conceive how a cystocele can re-form in any of them. Practically all the cases had a great

relaxation of the pelvic floor, with marked rectocele and in all cases a careful perineum operation was performed. As a majority of the patients operated upon were over sixty years of age, it was considered that, even if the fundus of the uterus should become displaced backward, that organ would, at the worst, rest more or less horizontally as a sort of bridge between the meatus in front and the repaired perineum behind, and that no extensive prolapse could occur. One elderly woman, whose age and general condition forbade either abdominal intervention or any operation requiring considerable time, shows now a fundus somewhat backward, but the organ is not large enough to produce rectal irritation, and the bladder symptoms are entirely relieved. Another patient, whose cervix was unusually long, while absolutely free from symptoms, was at first somewhat disturbed by the fact that she could feel the os in the vagina and feared that the old prolapse was recurring. An inspection showed that the attachment to the bladder was firm, and she declined to have the extra half inch of cervix removed.

There are several classes of cases in which the procedure I have described would seem to be indicated:

1. Very aged or infirm women, where a pro-

longed vaginal technic or abdominal section would not be safe.

2. Cases where the uterine body is already high up in the pelvis as the result of previous operations, but without relief of the cystocele.

3. Cases where the body of the uterus has to be removed, as in the case of uterine fibroids already described, and in which the bladder has become so stretched that merely supporting the stump from above will not iron out, so to speak, the cystocele pouch.

I need not say that the device here described should not be used universally or indiscriminately. The operations of Duhrssen, Goffe and Truesdale, and others, and the many modifications or combinations of them, will be used for the greater proportion of cases. There will still remain, however, or at least I conceive it so, a very considerable number of cases, usually rather hard to manage, in which this use of the uterus as a bladder support will be found advantageous and will afford an easy and safe means of giving relief to a most distressing condition.

ADDENDUM.

In a series of cases operated upon since the above paper was read a more exact method of suturing the cervix to the tissues below the meatus has been worked out. On a more careful dissection of the tissues it became apparent that the firm structure to which the uterus had been fastened was that band of the triangular ligament which runs below the urethra and spreads out laterally, in a fan-shape, to the pubic bones. (See fig. 1.) This ligament is very firm and inelastic, and no pull exerted upon it in any way appears to disturb the bladder or urethra. This fact is sufficient to explain the lack of symptoms which had rather surprised me in the earlier cases.

The unyielding nature of this structure also gives me additional reason to believe that when once a firm union has taken place between the dense tissue of the cervix and that of this ligament, the support of the bladder thus afforded by the uterine body will be permanent.

Since the reading of this paper eight additional cases have been operated upon, making now, sixteen in all. In one of these the union between the cervix and fascia was imperfect, apparently due to some constitutional condition, since an operation for ventral hernia in an old scar, undertaken at the same time, was likewise unsatisfactory. In this case, however, the symptomatic result is perfect at the time of writing, as the uterus was suspended, and there was sufficient union of the fascial flaps to obliterate the bladder pouch. Should this stretch out in the future it will be a simple matter to denude and suture the cervix once more to the triangular ligament. As the fundus is firmly attached above, the result, assuming that union takes place on the second attempt, should be as good as has been secured in all the other cases.

DISCUSSION.

DR. WILLIAM P. GRAVES, Boston: Dr. Smith's operation seems to me a very ingenious, and I am sure, a useful one. I have never seen the operation described in literature, and I think that Dr. Smith may safely assume the credit of having invented it. He speaks of its possible disadvantages in causing a retroversion of the uterus, and in this connection I wish to bring out a point which doesn't seem to be well known.

The uterus after the menopause is always retroverted in the second degree, so that its axis is coincident with the axis of the vagina. Therefore, inasmuch as this operation is recommended only after the menopause, it would not seem that any harm could be done by bringing the cervix forward. The operation is apparently especially applicable in those cases of elderly women where cystocele is present without prolapse of the uterus. In cases of this kind pessaries are often of little value, as the bladder is apt to come down past the support. If there is prolapse of the uterus, or if the uterus is heavy, or if the patient has not reached the menopause, I doubt if the operation is feasible. In younger women if the uterus should be pulled forward, as in Dr. Smith's operation, retroversion would result and possibly a later prolapse.

I favor the idea of this operation in the cases for which Dr. Smith recommends it, and I should be greatly interested to hear the later report from Dr. Smith as to the eventual outcome of his cases.

DR. HERBERT L. SMITH, Nashua (closing): I have nothing more to say except that I should limit the operation to certain definite cases, as Dr. Graves has said.

The history of one case impressed me much. It was that of an elderly woman who had the care of invalid husband, whom she had to lift. She had been operated upon by abdominal section, and the uterus was suspended, but the cystocele remained. She begged for relief from her surgeon, a well-known Boston operator, who told her that no other operation would do any good; that the cystocele would stretch out again. He advised her to have a pessary applied. That did her no good. She was referred to me, and I decided to try this expedient. Now she says she "does not know she has a bladder." The most interesting thing of all was that, whereas I feared the weight of the uterus might pull on the urethra or bladder, she has had no urinary symptoms from the moment of the operation; and I might add, a similar freedom from discomfort has been noted in all cases operated upon up to the present time.

DIAGNOSIS OF EXTRAUTERINE PREGNANCY.*

By GARRY DEN. HOUGH, M.D., NEW BEDFORD, MASS.

TUBAL pregnancy presents itself to us in one of two ways—either as an ordinary case of pelvic disease or with symptoms due to rupture of the gestation sac and consequent hemorrhage.

The latter condition may constitute one of the gravest of surgical emergencies and demand immediate operation. Very exceptionally the

* Read at the annual meeting of the New England Surgical Society, Boston, Oct. 6, 1916.

bleeding may cease, the effused blood be absorbed and the patient recover. Less rarely the hemorrhage ceases for a time, but recurs, and then the recurring bleedings may be fatal, or the case may become one of another type, to be considered in a moment.

The typical picture is that of a sudden, acute abdominal lesion, plus an internal hemorrhage. Such a symptom group in a woman of child-bearing age should suggest a ruptured tubal pregnancy. The first symptom is a sudden, severe pain in the abdomen, often accompanied by vomiting. The patient almost at once feels extremely faint and ill. She is perfectly conscious and remains so. The abdomen is often distended and rigid, and it becomes excessively tender. A gradually increasing pallor of the surface is soon noted. The pulse becomes rapid and weak without at first, any rise of temperature. The patient feels more and more faint, but her pains may entirely disappear. She becomes restless, sighs deeply, yawns, the pulse becomes weaker and weaker, finally imperceptible, and gradually she sinks, maintaining a perfectly clear mind to the very last.

There are a few special points that merit attention:

1. Previous history. If before the beginning of the attack, the woman had symptoms of an early pregnancy or had pelvic pain associated with some menstrual abnormality these things are highly suggestive. The absence of these points from the history is of no value whatever as negating the diagnosis.

2. At the moment of the attack the patient is, as a rule, in good health. This makes it unlikely that we have to do with a perforation of the stomach or bowel or with the rupture of an internal abscess or of a suppurating cyst.

3. The abdominal tenderness is very apt to mislead, for most of us have the fixed idea that abdominal tenderness always means an inflammatory condition, which is a grievous error. There are at least three intra-abdominal accidents, not inflammatory, that are associated with marked tenderness,—twist of the pedicle of an ovarian cyst, ruptured ovarian cyst and ruptured tubal pregnancy.

4. Free fluid in the abdominal cavity is but rarely discoverable.

5. Pelvic examination is usually negative. The most that we can expect to find is tenderness and possibly a feeling of fullness and boginess in the pouch of Douglas.

The other type of case where the gestation sac is ruptured is that of small, recurrent hemorrhages. The patient will tell you that, a few months ago, she thought that she was pregnant, but that when, if pregnant, she was some two or three months along, she one day had a rather severe abdominal pain, perhaps associated with faintness, and that since then, from time to time, she has had similar but less severe attacks.

She has now more or less constant pain and distress. Perhaps she has noted a tumor in the lower abdomen. We find some tenderness of the lower abdomen and of the pelvis. The tube may or may not be palpably enlarged. There is usually some rise of temperature, at any rate toward night.

Quite different from the above are the cases in which the gestation sac has not ruptured. In this group we find four types of history, either of which should suggest tubal pregnancy.

1. The pelvic pain type. She says that she is pregnant, has skipped one, or two, or even three periods, but that she is troubled with cramps or colicky pains low down in the abdomen. On particular investigation we find that this pain is in the region of the uterus and of one tube.

2. The abnormal menses type. She says that she does not know whether or not she is pregnant. Either she has had one or two abnormal periods or she has skipped one period, and had one which was abnormal. Rarely, in such a case, is the possible pregnancy as far along as three months. The menstrual abnormality consists of one or more of the following symptoms: (a) the flow was not at the proper time, but either earlier or later than normal; (b) the duration was less than normal; (c) the quantity was less than normal; (d) the color was paler than normal. In addition to the menstrual abnormality she will, as a rule, have had the pelvic pain described under the previous type.

3. The miscarriage type. She says that she thinks she is having a miscarriage. Rarely is such a case as far along as three months. Usually she will have had some of the symptoms of the pelvic pain type or of the abnormal menses type. Microscopic examination of what has come away will show that there are no fetal elements in it, and so settle the diagnosis.

If the history is that of either of these three types, the diagnosis can usually be made. Look for the signs of pregnancy, particularly the changes in the mammary glands, discoloration of the vulva and vagina, softening of the cervix, and intermittent uterine contractions. Remember that none of these are as well marked as in normal pregnancy. Some women always have, at a very early period of their pregnancies, certain peculiar feelings, differing in different persons, but constant for each individual, which let them know the condition of things. In multiparae, particularly in those who have had several children, such symptoms should be enquired for. Their presence should be given due weight; their absence, however, is of no negative value.

On pelvic examination we find that the uterus is almost always pushed to one side, sometimes very much so, and is smaller and harder than at the corresponding period of normal pregnancy. We also find at one side of the uterus (sometimes on both sides) or in the cul-de-sac of

Douglas a soft sausage-shaped or ovoid tumor, which is the pregnant tube.

4. The hospital type. This includes the neglected cases of the other types, and is, perhaps, the type most commonly met with by us in hospital practice. The early history is apt to be one of pelvic pain, abnormal menstruation, perhaps of a miscarriage or of small recurrent hemorrhages. Whatever it was at first, she is now evidently a decidedly sick woman, and is clearly growing worse. Fever, pelvic tumor (often of pretty large size) which may be so hard as to simulate a fibroid, or so soft that it evidently contains fluid (pus or blood), pain and tenderness, are the present symptoms. Diagnosis must usually depend almost wholly on the history, and, alas, is often impossible before operation. But though correct preoperative diagnosis may be impossible, the treatment is rarely in doubt, and rarely fails to clear up the case and result happily for the patient.

When a normal uterine pregnancy is associated with a tubal pregnancy, a diagnosis is highly improbable. A bilateral tubal pregnancy is also of such infrequent occurrence that it is almost invariably overlooked. The same is true of the interstitial variety of tubal pregnancy, or pregnancy in a rudimentary horn, in one horn of a bicornuate, or in one side of a septate uterus. That all of these curios do occur I can assert positively from my own experience. Perhaps, at our hundredth meeting, some one will be able to give explicit directions for the differential diagnosis of each.

EXTRAUTERINE PREGNANCY.*

By RALPH H. SEELYE, M.D., SPRINGFIELD, MASS.

BECAUSE diagnosis is, in the last analysis, the most essential factor in medical practice is probably the reason why the consideration of ectopic gestation becomes one of the most fascinating problems with which the surgeon has to deal.

It has been most interesting to observe the development of knowledge on this subject, as many of us in our own professional experience have been able to do, from the extrauterine pregnancy as it was known twenty-five years ago, to the condition as it is known today. A quarter of a century ago a woman who bled to death from a ruptured, impregnated fallopian tube presented sufficient evidence to warrant the diagnosis of ectopic pregnancy.

Frequent opening of the abdomen for conditions of lesser gravity revealed many a mistaken diagnosis, and not a few diagnoses of pyosalpinx and appendicitis were changed to extrauterine pregnancy. Even at the present time it is probably be truthfully stated that more errors are made in the diagnosis of ectopic gestation than in any other abdominal lesion.

To follow the prescribed and accepted and al-

together proper order of things in the consideration of medical subjects, however, the causation of this condition must be first considered.

It is obvious that there must be some pathological change which affects the fallopian tube in some way so as to prevent the free passage of the ovum into the uterus. Previous pelvic inflammatory disturbances, ovarian, tubal and uterine tumors may be considered as causative factors in about 60% of the cases (Graham). The other 40% show no particular abnormality. It is even stated (American Text Book of Gynecology) that in some cases of ectopic gestation the microscope has disclosed no deviation from the normal in the epithelium of the tube. When we take into consideration the very large number of minor as well as major abnormalities that are found in the daily routine of pelvic surgery, it inclines one to hesitate in declaring with much positiveness that these abnormalities are to be held responsible for the failure of the ovum to reach the uterus. Until more light is cast upon it the aetiology of ectopic gestation must continue to be shrouded in uncertainty.

The pathology of this condition is, however, much more readily understood. As the ovum develops, the wall of the tube becomes gradually thinned by the growth of the villi into its surface so that usually in the early stages rupture occurs, or less commonly the ovum escapes, or partially escapes from the distal end of the tube; or, in some instances, as we are informed, when it is located near the uterus the ovum enters that organ.

When the tube ruptures, the ovum may or may not enter the abdominal cavity. If it does, conditions may be such that the placenta attaching itself to contiguous structures develops its circulation from them and allows the foetus to live and come to term. Two such cases I have seen, one of a brother practitioner and one of my own. They both died. My case was correctly diagnosed by the family physician in a country town by palpation and the discovery that the uterus was small and only four inches deep. In this case the woman had felt motion until four days previous to operation. A dead child was found, a male, weighing 6½ pounds, lying in its membrane in the abdominal cavity. The placenta was attached all over the lower abdomen and pelvis in such a way that it was impossible to remove it safely. The membranes were stitched to the abdominal wall and the cavity packed. Sixteen days later she died of sepsis. This was twelve years ago. I wonder if with the constantly increasing improvement in abdominal work we would not today rather face the somewhat desperate procedure of removing the attached placenta than the likelihood of sepsis developing during the sloughing out of the placenta.

Haemorrhage accompanies the rupture of the tube, and therein lies the essential element in the pathology of extrauterine pregnancy. It is

*Read at the inaugural meeting of the New England Surgical Society, Boston, Oct. 6, 1916.

likewise the most important factor in the diagnosis, prognosis and treatment as well. It may be so slight as to cause practically no symptoms, or it may be so severe as to cause instant death.

The symptoms of extrauterine pregnancy up to the time rupture or tubal abortion occurs are so trivial that it must be very rare that a diagnosis has been made in that stage of the disease. No instance of it has come to my knowledge.

When rupture does occur, the haemorrhage may be so slight as to cause little disturbance. There is pain, mild or severe. A not constant, but very significant feature, is pain deep in the pelvis, often in the rectum, due to blood in Douglas's cul-de-sac. The more haemorrhage, the more pain. The most characteristic symptom is the slight, dark, bloody vaginal discharge which occurs, usually in from five to six weeks after the last menstrual period.

On the death of the embryo the uterine decidua loosens and may come away intact, but more often it loosens in shreds. This gives rise to this external haemorrhage, which must never be disregarded in arriving at a diagnosis of tubal pregnancy.

My experience has led me to the conclusion that the diagnosis of ectopic gestation may be confidently made on the presence of this occurrence accompanied by pain. This is well illustrated by a recent case: A woman was taken with a moderately severe pelvic pain, accompanied by a dark vaginal discharge. She had gone ten days over her menstrual period. On getting this history, I said to the nurse: "This is extrauterine pregnancy." On examination, a rounded, symmetrical mass was found which was apparently the uterus enlarged to about the size it would be if two months pregnant. Diagnosis from physical examination, pregnancy with attempt at miscarriage. After a delay of a couple of days, during which the symptoms subsided, an ether examination disclosed a uterus enlarged by what was apparently a fibroid growth. Opening the abdomen a ruptured fallopian tube was found, plastered onto the top of the uterus. If I had stuck to my diagnosis made from the history, I should have saved one of the many mistakes I have made in the diagnosis of this condition.

On the other hand, and curiously enough while narrating the above case, I was interrupted to see a woman, who, five weeks after a normal menstrual period, had a scanty, bloody vaginal discharge, with moderate pain. She thought she was pregnant and had even attempted to induce an abortion upon herself. The bloody discharge was not as dark in color as is ordinarily found in extrauterine pregnancy. Examination showed only an enlarged, somewhat tender retroverted uterus. The diagnosis of ectopic gestation was made, only to be proved wrong in a few moments by discovering on abdominal section that the patient's diagnosis of pregnancy was correct. In spite of this

case, in which perhaps the error was due to disregarding the too bright color of the vaginal discharge, the diagnosis must be allowed to depend largely upon the history of the patient.

Some years ago a nurse was brought to the hospital with the characteristic story of six weeks' delayed menstruation, scanty, dark, bloody discharge and pain. She stoutly denied the possibility of pregnancy, but the diagnosis seemed clear, and a ruptured impregnated tube was found.

Several of my cases have had flowing to a considerable extent, and have been curetted on the supposition that an abortion had taken place. Last winter a woman in such a condition was curetted by a friend of mine. He discovered at the time what he considered to be a small ovarian tumor, but not being an abdominal surgeon, did not open the abdomen. I saw her three weeks later suffering severely with abdominal pain and considerable general disturbance, with fever and accelerated pulse. The history of the case and the "ovarian tumor" made the diagnosis seem clear, and ectopic pregnancy was found.

I note one case which I curetted in 1903, and felt a mass in the left side, which was thought to be pyosalpinx. Two weeks later, to my chagrin, I found a ruptured, impregnated tube, with a large amount of blood clot.

In several of my early cases the diagnosis of pyo-salpinx, before operation, had to be changed to ectopic pregnancy at operation. This is not at all surprising, however, in cases that did not come to early operation, as was more frequently the case fifteen or twenty years ago. In those cases there was considerable secondary inflammatory action, with elevated temperature, accelerated pulse, abdominal distention and rigidity, and by vaginal examination a large, tender mass.

Occasionally one sees an inflammatory condition of such intensity as to present the picture of acute appendicitis, with general peritonitis.

I shall not forget the second case of extrauterine pregnancy which I operated upon. It was in 1896 that I was called 25 miles up into the country to see, in a farmhouse, an unmarried girl of 20, who on Monday was seized with a sudden pain in the right lower abdomen. On Tuesday she was up and about; on Thursday she drove five miles for a Thanksgiving dinner. That afternoon very severe pain in the right side developed. Her physician was called, and gave her morphia. She grew steadily worse, and on Sunday, six days from the onset of her trouble, I found her with a temperature of 103.8, and a pulse of 140, with abdomen greatly distended, rigid, and exquisitely tender. She was semi-conscious and gave one the impression that she would live but a few hours. She was also blanched. Inquiry brought out the fact that she was naturally pale and anemic. Almost against my judgment, I was persuaded by the mother to operate in the face of impending dis-

solution. An incision over the appendix revealed the abdominal cavity filled with black blood clot. A median incision was made, and a ruptured tube removed. Large masses of clot were removed, the abdomen thoroughly washed out, and a drain inserted. A year later I was pleased to receive a newspaper clipping from the family physician announcing the engagement of Miss So-and-So to Mr. So-and-So.

The prognosis of ectopic gestation depends upon the treatment, and the treatment depends upon the diagnosis.

I find records of 49 cases of tubal pregnancy which I have operated upon. Four of these cases died. One was the full-term abdominal pregnancy already referred to; another was a woman operated upon twelve years ago for ovarian cyst—which she had—but in addition she had a ruptured tube, bound down behind the uterus with a mass of very dense adhesions. For some reason unknown she did not rally from the operation, and died the next day. The other two cases were women who were exsanguinated, and it is in this class of cases only that there is any occasion for discussion of the treatment of extrauterine pregnancy. My experience with these cases is not sufficient to warrant the drawing of authoritative conclusions. Nevertheless, I have been forced to the opinion that women exsanguinated from ruptured tubal pregnancy are not proper subjects for operation until the collapse attendant upon the hemorrhage and shock can be at least partly overcome.

Both of my fatal cases were in 1902. The first one was sent to the hospital three days after the occurrence of pain and collapse. She was markedly exsanguinated. The pulse was 140, and scarcely perceptible. A ruptured tube was removed, and with it a very large amount of blood clot. She did not rally from the operation, however, and died two days later.

A few months after this I was called up into the country to see a young woman who three days before had abdominal pain and bloody vaginal discharge. Three hours before I saw her, pain recurred. Her pulse was then 80. I found her blanched and pulseless. Five hours after operation she died.

I have always felt that if operation had been delayed until these two women had recovered somewhat from the effects of internal hemorrhage, their lives might have been saved. This opinion is substantiated by two similar cases which were treated differently.

Ten hours after collapse I saw a woman in a farmhouse, apparently dying—blanched, pulseless, sweating, unconscious, and scarcely breathing. Various methods of resuscitation having proved of no avail, I expressed my sympathy to the family and left her with her physician. Three days later she had recovered sufficiently to be brought to the hospital. Although markedly affected with hematogenous jaundice, her gen-

eral condition was good. She withstood the operation well and made a good recovery.

Last winter a woman was sent into my hospital service,—blanched, collapsed, and almost pulseless from ruptured ectopic pregnancy. Her blood pressure was 60. Inability to procure a donor made transfusion impossible. The use of normal saline solution intravenously and subcutaneously, brought the blood pressure up to 100. At this point the operation was begun, the salt solution meanwhile being kept up. At the end of the operation the blood pressure was 110, and a good recovery followed.

Extrauterine pregnancy is, perhaps, as satisfactory a condition as the surgeon has to deal with, presenting as it does, the very nice problem of diagnosis, never lacking in interest, and offering an opportunity for immediate and practically certain relief without annoying sequelae and disastrous recurrences frequently found in other classes of cases.

DISCUSSION.

DR. FREDERICK B. SWEET, Springfield: My experience with the condition under discussion has brought to me two very distinct impressions.

First: The difficulty, the great difficulty, of diagnosis before rupture.

Second: The low mortality of this condition as managed in recent years, considering its gravity.

These impressions are strengthened by the papers just read. It seems to me that one reason we seldom make correct diagnosis is because few women seek advice before rupture has occurred. They think the early symptoms of little importance, and fail to consult their medical man or surgeon. Aside from lack of opportunity, however, the problem itself is a difficult one, as Dr. Seelye's frank recital of his experience proves. For often when we think it is extrauterine pregnancy, it is not, and vice versa. In the few cases in which I have made correct diagnosis before rupture, I have felt that luck rather than wisdom was the determining factor.

Finally as to mortality: This is lower than in almost any other abdominal emergency and that, whether operation be done at once, delayed for cause, or on occasion withheld altogether.

There is one point concerning these cases which neither speaker brought out, namely, the comparative frequency of a repetition of the condition in the other tube. My operative records show several such cases.

DR. MICHAEL F. FALLON, Worcester: Extrauterine pregnancy is not always in the tube, and it fell to my lot sometime ago to find an ovarian pregnancy. The pregnancy occupied the ovarian tissue the size of an adult's little finger tip. The specimen was sent to the Harvard Medical School. At the time of operation there was a quantity of blood in the pelvis, and the remarkable thing was that there was a constant dripping of blood from this pregnant area in the ovary.

DR. J. M. GILE, Hanover: Doubtless most cases of extrauterine pregnancy should be operated on as soon as diagnosis is made. When, however, the patient is severely exsanguinated, the additional shock of immediate operation may, I believe, prove fatal, whereas, with time given to allow them to rally, they may be operated on with safety.

In my own experience, the patient rarely actually bleeds to death from this condition, for, despite any theory concerning it, the blood actually does clot about the seat of rupture, and as the pressure diminishes, this clot becomes firm enough entirely to stop the hemorrhage, and in this condition, with the use of saline stimulation, the patient may more safely be allowed to wait for a period of several, and even many hours, than to be operated on at once. In the cases to which we are called, often many hours after the rupture occurs, I believe the bleeding will either have stopped or the patient will have died before aid arrives.

DR. PEER JOHNSON, Beverly. I am inclined to agree with the position Dr. Gile takes, because the only case of extrauterine pregnancy I have lost was one upon whom I operated while in an exsanguinated condition. Personally I feel very strongly that the only thing to do in the extremely exsanguinated cases is to leave them absolutely alone temporarily and give the vessels a chance to close, postponing operation until a more favorable time.

DR. HOMER GAGE, Worcester: I should like to get into this discussion to emphasize a single point. Shortly after I had begun the practice of medicine, I remember very well being asked to see the wife of a friend, who was also a friend of Dr. Maurice H. Richardson.

She had had in the night a sudden internal hemorrhage from the rupture of a tubal pregnancy. It was decided to watch and wait. In spite of a condition of extreme shock, which was steadily growing worse, we waited for Dr. Richardson. Four of us stood around and watched that woman die ten hours after the rupture. Today, I should consider such waiting indefensible.

We have now the Kimpton method of immediate transfusion, or, if these tubes are not at hand, we have the method used so successfully at Mt. Sinai Hospital, New York, of drawing the blood into a glass syringe and mixing it with 2% citrate solution, which can be always available.

Immediate operation and immediate transfusion, when the condition of the patient demands it, are the things to do.

DR. SAMUEL J. MIXTER: I want to get into this too. I have seen patients die from waiting. You cannot tell which one is going to die. That case that Dr. Gage speaks of, I remember very well. You can't tell which way they are going to go. You can do better if you have time for transfusion, if not, get in salt solution; get the tube tied off. Do something and do it quick, and you will save more people than you will kill.

Now there is one thing that has not been said: the septic cases—cases that have been neglected. They get septic abscesses in the pelvis; they die. You should make a hole in the top of the vagina; let the blood and pus, and sometimes even a broken-down fetus, come out. Put in a big enough tube and the patient will get well.

In Chadwick's cases of abdominal pregnancy with death of the fetus, supposed at the time to have been a rupture of the uterus, he removed an unchanged dead baby from the abdominal cavity some years later, the woman being pregnant at the time. I remember this case well, for I had the honor of assisting at the operation.

DR. W. P. GRAVES, Boston: It is important in a discussion of this subject to take into consideration the pathological anatomy of tubal pregnancy.

There are in these cases two capsules, the outer one being composed of the thinned-out wall of the tube, while the inner capsule is the surrounding membrane of the fetal tissue. If only the inner capsule ruptures, the blood may ooze out slowly, and eventually clot, forming a tubal hematocoele. In such a case there may be a sudden fainting spell, with recovery after the blood begins to clot.

If the outer capsule breaks, the blood pours directly into the peritoneal cavity unchecked. The latter condition is that in which the patient bleeds to death unless there is surgical intervention. It is sometimes impossible to tell from the symptoms of a given case which condition is represented, and it, therefore, seems to me sensible to interfere and stop the hemorrhage as soon as possible. (Demonstration on blackboard.)

DR. GARRY DE N. HOUGH (closing): As far as the diagnosis of tubal pregnancy is concerned, I use the scheme that I presented here today, and have used it for the last ten years. I think that in a fair majority of cases diagnosis can be made, and that the cases in which diagnosis is really difficult are the neglected cases of people who come to the hospital so long after the original thing has happened that they cannot give you an intelligent history.

I agree with those who believe that cases with rupture should be operated upon at once. It is a case of blood pressure. If the blood pressure is too low, the patient cannot stand it. You can often get a forceps into the abdomen through a small incision in the vaginal vault and stop the bleeding. This will give control of the bleeding long enough for a transfusion to be done, and then one can safely proceed to whatever radical operation is necessary. I am very glad our papers have brought out so much discussion.

DR. RALPH H. SEELYE (closing): This discussion has been very interesting. I cannot agree with the suggestion made by Dr. Hough, that the bleeding point may be reached by a clamp through the vaginal vault. It seems to me that one should go into the abdomen and see what he is doing.

The position I take in regard to operating on exsanguinated cases—I refer to the extreme cases of women who are pulseless, blanched and sweating—is that these women, if operated upon immediately, are in more danger than if you let them wait. They are bled out, and the hemorrhage will in most cases stop spontaneously. Do everything possible, by means of salt solution, blood transfusion and stimulation, to improve this condition. But do not operate until the patient begins to rally from her collapse. It is hard to sit by and not operate, with the patient in a condition of extreme collapse and perhaps still bleeding, but my experience makes me feel very strongly that it is the proper thing to do.

DR. S. J. MIXTER: Put them on the table; first give them salt solution or blood transfusion, then go ahead and operate.

This is the last of the papers, I believe. This has been an interesting meeting and the discussions have been good. It is a good thing to step on someone's toes occasionally and to have your own stepped on. I thank you for your attendance and support. This being the last of the literary part of the program, I, as presiding officer, have finished and I thank you very much. The meeting is adjourned.

Original Articles.

VARIATIONS IN PULMONARY RESONANCE.

By GEORGE C. SHATTUCK, M.D., BOSTON.

[From the Medical Out-Patient Department of the Massachusetts General Hospital.]

GENERAL OBSERVATIONS.

For a number of years I have been studying variations in pulmonary resonance in order to determine their significance in cases in which the question of the existence of tuberculosis of the lungs might arise.

The frequency of slight dullness at the right apex above the clavicle in normal chests is well recognized, and requires no further comment; but when disease exists at the right apex, and when auscultation reveals no sign of it on the left, one would expect the right apex behind to be duller than the left. This is by no means always the case. In fact it was noticed repeatedly in cases in which the diagnosis of early pulmonary tuberculosis of the right apex had been made that slight dullness was found at the *right* apex in front and at the *left* apex behind; also that there were differences of resonance between the bases of the lungs in the back.

To throw light on the significance of these facts, supposedly normal chests were carefully examined, with the result that slight relative dullness at the left apex behind was found not infrequently.

The differences between the apices behind was less marked than that above the clavicles, but was definite enough to be recognized occasionally by students learning to percuss.

With regard to the bases behind, the problem is more complex because, as Dr. Richard C. Cabot has pointed out, stomach resonance can often be elicited in this region. It mixes with the lung resonance and modifies the sound by adding a tympanitic quality to the percussion note. This difference in quality of resonance sometimes makes it difficult to decide which side is the more resonant.

A series of one hundred supposedly normal chests has been studied recently in detail in order to provide more definite data on the occurrence of the variations mentioned above.

Resonance was compared above the clavicles, in the second interspace in front, and at the apices and bases behind. When comparing the apices behind it is important to select the most resonant point which is near the centre of the triangle formed by the upper edge of the trapezius muscle, the lateral muscles of the spine, and the spine of the scapula. Misleading results are likely to be obtained if the points selected for comparison are not symmetrically situated, because the best resonance covers a very limited area.

At the bases there is an area bounded by the spinal muscles, the diaphragm and the roll of the latissimus dorsi which has been called the "triangle of percussion." The best resonance in this region is found where the muscles are thinnest; that is to say, a little below the angle of the scapula and well above the diaphragm.

For the observations which follow, the lightest percussion was used which, in the individual case, would give a clear, resonant note. When heavier percussion is used, slight differences of resonance are more difficult to detect, but do not disappear.

MATERIALS.

Cases were excluded from the series if cardiac or pulmonary symptoms were complained of, if the past history gave evidence of phthisis, pleurisy, pneumonia or protracted cough, if careful examination showed anything abnormal, or if there was more than the usual slight asymmetry of the chest. Most of the obese patients were excluded also because such heavy percussion was required to elicit resonance that slight differences were difficult to detect. The series includes women only, nearly all of whom were over 20 years of age and none younger than 16. The cases were taken consecutively as they came to the Out-patient Clinic, without selection except as in above mentioned. The results in detail are shown in the table which follows.

While under examination the patients sat with hands in the lap, the shoulders relaxed as much as possible, and they were asked to bend forward slightly when the bases were being compared.

RESULTS.

Perhaps the most interesting facts brought out are that dullness at the right apex in front frequently extends below the clavicle to the second rib, that slight relative dullness of the left apex behind is common and that the same is true of the left base behind. Relative dullness of the left apex in front was found in only two cases. One of the patients was left-handed but the heart was in the usual position.

Relative dullness was generally, if not always, associated with increase of resistance.

TABLE OF RESULTS IN 100 CASES.

1. No definite difference of resonance at apices or base behind: 22 per cent.
2. Resonance slightly less at *right* apex in front above clavicle only: 27 per cent.
3. Resonance slightly less at right apex in front above clavicle and to second rib: 31 per cent.
4. Resonance slightly less at *left* apex above clavicle: 2 per cent. (one case was left-handed.)
5. Resonance slightly less at *right* apex behind: 7 per cent.
6. Resonance slightly less at *left* apex behind: 34 per cent.

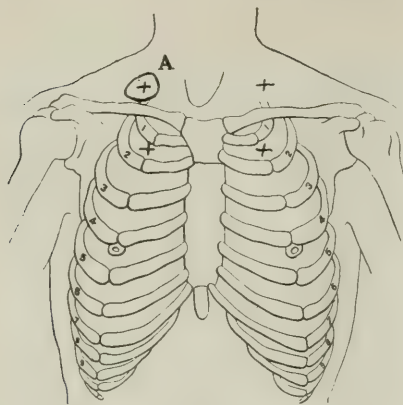


FIG. 1. a Resonant area of apex. The crosses show the points at which resonance was compared. Outside of the circumscribed area relative dulness is to be expected.

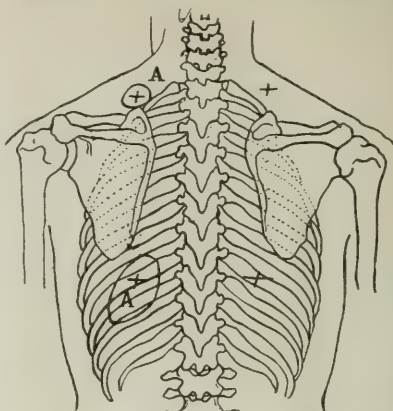


FIG. 2. a a Most resonant areas. The crosses show the points at which resonance was compared. Outside of the circumscribed areas relative dulness is to be expected.

7. Resonance slightly less at right base behind: 6 per cent.

8. Resonance slightly less at left base behind: 28 per cent.

DISCUSSION.

In attempting to explain slight relative dulness of the left apex behind, it may be observed that a little drooping of the right shoulder is extremely common. This was, in fact, observed in a large proportion of the cases even when every effort was made to have the patient sit straight. Drooping of the right shoulder is associated with slight relaxation of the muscles which cover the right apex behind, those on the left being relatively contracted. It is well known that differences in tension of muscles modifies resonance and that resonance is distinctly diminished over contracted muscles. This difference in muscle tension could easily account, I think, for most of the cases in which relative dulness was found at the left apex behind, but in some of the cases in which it occurred no such asymmetry was observed.

For relative dulness at the left base no such simple explanation presents itself. If the reverse were generally true, as it was in six of the cases, this might be explained on the ground that the right diaphragm is higher than the left and rests upon a large, solid organ, namely the liver. But, if this explanation is plausible, is it not at least as likely that the heart, which considerably diminishes the depth of lung on the left side, might diminish lung resonance below the angle of the scapula?

If we accept the view now prevailing that even very light percussion sets the depths of the lungs in vibration, is there anything improbable in the above hypothesis? I think not, and I am convinced that slight cardiac dulness can often be found by light percussion in the axilla,

even when the heart is of normal size. (Relation of Dulness to Cardiac Outlines, BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxiv, p. 301, 1916.) It would not seem surprising, therefore, if traces of it should appear in the back. The shape of the chest might determine its presence or absence there.

X-rays of the chest were taken in 6 of the patients. These showed slight abnormalities such as are found in 90-95 per cent. of all chests; but it seems improbable that these abnormalities bore an important relation to the findings above described.

CONCLUSIONS.

Slight differences in pulmonary resonance below the clavicles in front, and at the apices and bases behind, are common in chests which can properly be regarded as negative from a clinical standpoint. These differences are ordinarily disregarded. They are important when, for other reasons, the existence of pulmonary disease is suspected. Under these conditions they may lead the examiner to believe the disease is more extensive than it is, or they may be a factor in causing him to make a diagnosis of phthisis when it does not in fact exist.

I think that I have seen many cases in which the diagnosis of phthisis has been made on insufficient evidence, with resulting hardship to the patient, and that the variations of resonance above mentioned may have led to errors in this direction. On the other hand, it should be emphasized that the variations of resonance discussed here are slight, and that the importance of well-marked dulness for diagnosis is not in question.

To the skeptical it may be said that the variations above described have been confirmed by other physicians to whose attention they were called, and that even students learning percussion can sometimes recognize them.

VARIATIONS IN PULMONARY VOICE SOUNDS.

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THE object of the work to be described was to gain detailed information as to the variations which are to be found in chests which might be classed as normal. For this study a chest was considered "normal" if the percussion and breath sounds showed no abnormal findings, if the chest was reasonably symmetrical, and the present and past history was negative as to pneumonia, pleurisy, chronic cough, etc. Cardiac cases were also excluded, due to the possibility that passive congestion might be a factor in some of the findings. One hundred cases were examined,—98 women and 2 men. Three patients were submitted to x-ray examinations for confirmation of the term "normal," and failed to show cause for the variations in physical signs. A somewhat larger number of similarly selected cases were sent for x-ray examination by Dr. George C. Shattuck with similar negative results, and thus it was not thought profitable to submit more cases in this series.

The method used was that of recording the areas in which the spoken or whispered voice sounds, or both, of one side of the chest were louder than on the corresponding area of the other side. That is, it was a comparison method. The work was facilitated by the use of individual cards stamped with the well-known diagrams of the front and back of the chest, and on these the findings were recorded. A careful record was kept of the age, weight and diagnosis in each case.

It was found that the spoken voice was audible over the whole chest, whereas the whispered voice often was appreciable only above the clavicles and spine of the scapula. As was expected, the spoken voice was transmitted with greatest intensity over the primary bronchi and apices. At the apex in some cases the relative loudness of the spoken voice could not be safely judged because of the too great volume of sound. In the earlier part of the work we noted that care in listening nearer the outer border of the apices made it easier to appreciate a difference, if present. In other words, at the inner margin of the apex in front, the voice sounds tended to be transmitted, probably from the trachea, in about equal intensity. A study of the collected findings, using the comparison method, is shown in the following table.

STATISTICS IN 100 CASES.

APICES

Front

	No. of Cases	PER CENT.	AGE	AVERAGE WEIGHT.
Rt. > Lt.	88	32	136	
W. and S. V.	66	33	138	
W. V. only	10	32	132	
S. V. only	12	32	134	
Apices alike	12	35	138	

Back

Rt. > Lt.	100	34	137	
W. V. to spine of scapula	94	33	136	
W. V. to top only	6	43	159	
S. V. to midscapula	100	34	137	

FRONTS BELOW CLAVICLES

Rt. > Lt.	100	34	137	
S. V. throughout	100	34	137	
W. V. to 1st rib	76	34	140	
W. V. to 2nd rib or below	24	31	129	

BASES

Rt. > Lt.	15			
S. V. only	15	32	134	
Lt. > Rt.	44			
S. V. only	44	37	144	
W. and S. V.	4	27	116	
Bases alike	41	30	131	

Examination of the findings disclose no striking differences in the average age or weight of the different groups. The difference in the extent of transmission of the whispered voice below the clavicles may well have been due to the quality of the voice, and also we note a greater average weight in those in which the whispered voice was not audible below the first rib.

In 100% of the cases the spoken or whispered voice, or both, were heard louder than on the opposite side, over the right front below the clavicle and at the right apex behind.

In the backs a noteworthy feature was the frequency with which the spoken voice was heard louder at the left base. This was noted to be generally more definite over the area just internal to the inferior angle of the scapula, which area is sometimes called the triangle of auscultation. The proximity of the stomach and its probable influence as a resonator has been suggested by Dr. Richard Cabot. The whispered voice was rarely transmitted to either base; perhaps the female voice was a factor in this.

Some 47 of the patients in this series were also examined by Dr. George C. Shattuck, who was studying the variations in pulmonary resonance. Neither of us knew in a given case what the other had found. For the purpose of comparison between these cases, tested for both resonance and the voice sounds, we will adhere to Dr. Shattuck's grouping,* and then list the number of cases and the findings as regards the voice sounds.

1. No definite difference of resonance at apices or base behind: 13 cases. Apices, Rt.>Lt., 13. Bases, Lt.>Rt., 8; Rt.>Lt., 2; bases alike, 3.

2. Resonance slightly less at right apex in front above clavicle only: 13 cases. Rt.>Lt., 10. Apices alike, 3.

* See JOURNAL, p. 599, "Variations in Pulmonary Resonance."

3. Resonance slightly less at right apex in front above clavicle and to second rib: 8 cases. Voice sounds here, 8.

4. Resonance slightly less at left apex above clavicle: No cases in the group compared.

5. Resonance slightly less at right apex behind: 2 cases. Voice sounds here, 2.

6. Resonance slightly less at left apex behind: 9 cases. Rt. > Lt., 9.

7. Resonance slightly less at right base behind: 3 cases. Lt. base > Rt., 2. Bases alike, 1.

8. Resonance slightly less at left base behind: 10 cases. Bases alike, 5; Lt. base > Rt., 3; Rt. base > Lt., 2.

The above results appear to show that the variations in voice sounds follow those in percussion with a fair degree of accuracy only over the right apex (Groups 2, 3 and 5), whereas in most they were variable, and in one (Group 9) even reversed.

CONCLUSIONS.

This study of the variations in pulmonary voice sounds and comparison with the variations in pulmonary resonance suggests the following:

The spoken and whispered voice, though most often louder at the right apex, are not necessarily so in chests that are clinically negative.

The left base may transmit the spoken voice louder in a surprising number of cases.

The variations in pulmonary voice sounds do not follow with any degree of accuracy those in pulmonary resonance, save over the right apex.

The transmission of the spoken and whispered voice over normal chests presents considerable variation, and this should be clearly appreciated in drawing conclusions as to the presence of pathological conditions, such as pulmonary tuberculosis, etc.

Medical Progress.

RECENT PROGRESS IN PHYSIOLOGY.

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WE cannot expect in these days that our conceptions in physiology are to be changed in revolutionary fashion as the result of single researches or within any short space of time. The mass of knowledge made secure by the labors of a century is large in comparison with the addition of a year, even though the number of the workers is greater than ever before. A profitable review of recent progress will take

less account of specific contributions than of gradual changes in emphasis and interpretation traceable to many sources. This fact may be illustrated in connection with present views of muscle contraction.

THE PRODUCTION OF MOVEMENT IN SKELETAL MUSCLE.

We have been accustomed to picture the contracting muscle as resembling closely a steam-engine. We know that in both the consumption of fuel results in motion. We know that in both there is liberation of heat, most of which is wasted so far as the accomplishment of work is concerned. It has been natural to believe that in the muscle, as in the locomotive, the heat is primary, and the movement the expression of the transformation into work of a fraction of this heat. Earlier theories of muscle contraction have been based upon this conviction; the attempt has been to account for the shortening of the muscle as the result of a previous evolution of heat within it.

We are now asked to consider the merits of a very different doctrine. The heat production is assumed not to precede the execution of the movement, but in a great degree to follow it. This unexpected temporal relation seems to be fully demonstrated through the skilful work of A. V. Hill¹ of Cambridge, England. He has employed thermo-electric apparatus of remarkable delicacy. The direct cause of the contraction is held to be the generation in the active elements of a form of lactic acid. This compound has long been recognized as one of several possible "fatigue substances."

Why do the finest contractile units—the fibrils—shorten when they are acidified? Probably because this change in reaction leads to the imbibition of water. Any attenuated structure receiving water into itself will shorten and thicken on the principle that it tends toward a spherical form as a geometric limit. The fibrils of muscle are supposed to be beset with nodes at frequent intervals, and if we assume that thickening at these nodes is not permitted, then it is the short cylindrical internodes of the fibrils which tend to become spherical at the moment of acidification.

Whence comes the lactic acid? It has been natural to suppose that it is formed when sugar is being destroyed. We are sure that sugar is the preferred fuel to be oxidized in support of muscular activity. The chemical relationship between sugar and lactic acid is a close one. But we are told that the acid must be derived from something different from sugar, an undetermined "precursor." The reasoning which led Hill to this conclusion is mathematical. The potential energy of lactic acid is too nearly equal to that of sugar to permit us to attribute the power displayed by a contracting muscle to the transformation of the latter into the former. A more energetic explosive is required.

As the conditions are now pictured, the arrival of the nerve-impulse causes the decomposition of the lactic acid precursor. Under the influence of the acid the fibrils take water to themselves and shorten. We have next to consider what happens during the relaxation. If the muscle is to return to its original length, the water which has entered the fibrils must be released. If it has been attracted into them because of localized acidity its release implies the disappearance of the acid. The process of relaxation is, therefore, conditioned by the removal of this compound. It might conceivably be neutralized or oxidized. The normal event seems to be different from either of these, and far more economical.

The acid is incorporated once more in the precursor which just now gave rise to it. An evolution of energy attended its formation, and the reverse reaction cannot be carried through unless a corresponding quantity of energy is supplied. The reconstruction of the precursor is an example of what the chemist calls an endothermic process. In this respect it is like the manufacture of starch in the leaves of green plants,—a synthesis which requires the driving power of radiant energy. In the muscle the renewal of the lactic acid precursor is made possible by applying energy derived from the combustion of sugar or some substitute.

It has been said that the chief heat production follows the act of contraction, instead of preceding it. In other words, it attends relaxation, and is the sign of oxidation devoted to reconstructing the standard ammunition of the muscle. In this service the sugar, or other food, is oxidized cleanly to carbon dioxide and water. The possibility that lactic acid may be formed as a result of a failure to complete this reaction is no longer emphasized if, indeed, it is not definitely denied.

At first thought it seems as though the new view of the muscular process were wholly without analogy, and far less acceptable than the old. We shall find, however, that it is easy to suggest parallel cases in the field of mechanics. One of the best for our purpose is the pile-driver. Suppose, at the outset, that the weight is hanging at the top of the guides. It may be let fall, dealing a blow to the pile. The puffing of the engine follows this blow and results in the storage of potential energy measured by the height to which the weight is raised. The next blow may be indefinitely postponed. Work may be discontinued for the night, and there will be latent in the contrivance the capacity to give one stroke next morning, even though the fire under the boiler is allowed to go out. So we have latent in a muscle the capacity to perform, not one, but many acts of contraction before it is necessary to consume more fuel.

Again, a muscle is like the air-brake, which is ready for instant service because of potential energy accumulated at some previous time. Or

it is like a storage battery which has been charged in the past when coal was burned to provide it with a store of energy. The merit of both the air-brake and the battery lies in their instant readiness for action and their independence of present fuel consumption. The muscle apparently has the same important quality. Of course, when a series of contractions is being executed the combustion and replenishing of the energy store fairly keeps pace with the detonations. But it is still fundamentally true that the oxidation is following, and not initiating, the individual acts.

The new presentation of the case is readily harmonized with the facts of fatigue. We have been accustomed to attribute fatigue to exhaustion of fuel and gathering of wastes. We have now to recognize that there will be complete recovery from fatigue whenever the lactic acid is perfectly removed and the stock of unstable precursor fully restored. Under ideal conditions the one implies the other. Fuel must be oxidized to secure the desired result. Failure of fuel will leave the muscle poisoned by lactic acid. The removal of the acid through the circulation is possible, but in this case the lack of precursor will sooner or later set a limit to activity.

One of the peculiarities displayed by frog's muscle when fatigued is a delayed relaxation. This is well explained on the terms of our theory. If contraction is due to the development of an acid reaction, relaxation cannot occur until the acid is removed. This will naturally be accomplished less surely and promptly as fatigue progresses. The question may be asked, however, why a severely fatigued muscle relaxes at all. To answer this it may be suggested that, while acidified fibrils will remain contracted so long as the surrounding material—sarcoplasm—is of a lower degree of acidity, a uniform concentration of the acid throughout the whole fabric will tend to the same distribution of water as though the reaction were neutral, that is, the state will be one of relaxation. Contracture will, then, be the sign of persistent acidity in the fibrils, while an entire failure of contraction will ensue when the general acidity is such that they can no longer exceed it at moments of stimulation.

When we consider the condition of contracture as we have just pictured it, the problems of tonus are brought to mind. We are reminded that a muscle may remain shortened without doing work or producing heat; in fact, heat has to be generated to allow it to extend. All that is needed to keep a muscle in contraction is a suspension of its life-processes. What is called tone may evidently be either of two utterly unlike conditions: it may result from an arrest of the metabolic activity or it may be a mild sort of tetanus due to rapidly recurring and blended contractions. Tone in the first sense will not necessarily be exhausting, and it will be unrelated to the production of animal heat. Con-

jectures regarding the nature of cataleptic rigidity naturally arise.

It is well established that the tonus of smooth muscle is an economical phenomenon in which a certain length of fiber is probably assumed and maintained as we have indicated—not so much by chemical processes, continuing over the whole period as by the suspension of such processes when they have advanced to a certain stage. The muscles of molluscs have been found to give an extraordinary illustration of such a fixation. It is reported that when the shells of the scallop are forced apart and braced by inserting a block of wood, this object may presently be pulled out, when the shells will remain as motionless as the jaws of a vise. They seemed to be attempting to close, when in reality they were merely locked in a particular position.

The All or None Principle. Several years ago Keith Lucas of Cambridge furnished strong evidence for the view that the grading of muscle contractions from the least to the greatest is a matter of the proportion of the fibers employed. He was led to the belief that the individual fiber contracts to the fullest extent or not at all when stimulated. A small contraction would, therefore, be one resulting from the coöperation of a limited number of the contractile units. A true maximal response would indicate that all the fibers had been excited. It is doubtful whether the majority of physiologists have been greatly impressed by this conception. It has, nevertheless, had strong support, and recently it has been supplemented by a thesis even more radical. This is to the effect that nerve-impulses within single nerve-fibers are invariable in intensity. The doctrine is defended most ably by Adrian.²

It is impossible to give a clear account of his methods and reasoning in a very condensed form. Still, the main argument may be given. We know that conduction along a nerve-trunk may be blocked by the application of anesthetics. The same effect may be produced by cooling. The anesthesia or chilling may be restricted to any desired length of nerve. Adrian has compared the result secured by making such applications to regions of varying extent in the sciatic nerve of the frog, sometimes making use of more than one zone in the same nerve. Suppose one nerve (A) is narcotized for a space of 20 millimeters, while in a second nerve (B) there are two regions, each 10 millimeters long, separated by an interval in which the anesthetic is not applied. If an impulse is to pass through the whole length of either nerve it has to traverse 20 millimeters in which it meets with resistance.

Now it is found that a given length of narcotized nerve may extinguish a nerve-impulse which could successfully penetrate two narcotized segments of half this length. There is only one easy explanation for this fact: that a

nerve-impulse emerging from a region in which it has suffered weakening immediately regains a certain intensity. If it did not, but continued with reduced strength, it would suffer extinction in the second short zone of lowered conductivity. Consideration will show that to admit this is to arrive at the conclusion that the intensity of a nerve-impulse is not determined by the strength of the stimulus producing it.

Perhaps this may be made clearer. Let attention be fixed on the segment of normal nerve between two regions of narcosis. We may think of this particular part of the nerve as being stimulated by the disturbance which enters it from the first zone of anesthesia. We know that this disturbance has been reduced below its original energy by at least 50%. (That is, it could not reach the end of another segment of high resistance of a length equal to that through which it has already come.) Yet the impulse actually set up by this subnormal disturbance is able to penetrate such a segment when it has first run along a few millimeters of unimpaired nerve. That is to say that a submaximal stimulus has developed a maximal impulse. The nerve has shown the "all or none" character long familiar in the heart, and lately ascribed to the fibre of skeletal muscle.

A simpler type of evidence has been furnished. Adrian has shown that if the narcotization of a given length of nerve just suffices to extinguish impulses originated by weak electrical stimuli it is not necessary to apply the anesthetic to any greater length of nerve to stop the passage of impulses started by the most powerful shocks. The inference is that with an adequate stimulus an impulse is sent along the nerve, which could not be endowed with any greater intensity by increasing the stimulus. This, once more, is the "all or none" principle.

If the process in a nerve cannot vary with the intensity of the stimulus causing it, how can we explain the graded effects often observed both on the sensory and the motor side in the actual performances of the mechanism? There seem to be two resorts available. In the first place, gradations may be secured by variations of the number of fibers employed. This is the same conception we must probably hold in regard to the performances of skeletal muscles, which can exert slight or powerful tensions, as may be required at different times. But there are difficulties apparent in the sensory realm. It does not seem likely that we judge one star to be brighter than another because it is able to bring into action a larger number of fibers in the optic nerve. Yet this may be true, and it is precisely what the dispersion phenomena of the retina would favor.

A second way in which we may reconcile the "all or none" principle with gradations of nervous effects is by emphasizing the possible variations in the frequency at which impulses may follow one another along the fibers. To increase

the number of nerve-impulses passing in a second may have results much resembling those which would follow actual increase in intensity without quickening of rhythm. Recent work has impressed upon us the high frequencies at which conduction may go on. Reference may be made to the observations of Forbes and Rappleye.³

Sensitive galvanometers placed in connection with either muscles or nerves give indications of rapid oscillations of electrical potential during activity. These indications may be made graphic and permanent by photographic methods. They give us the means for estimating the rhythm of life-processes in both these tissues. When a human muscle is voluntarily contracted and the electrical signs of the action are registered by the galvanometer it is usual to find that the apparently continuous contraction is compounded of individual acts which are repeated about 50 times in a second. It has been urged that this demonstrates that the impulses causing the contraction are sent from the motor centers in the cord with just this frequency.

Forbes and Rappleye have shown that this correspondence between processes in muscle and in nerve should not be assumed. They have studied the electrical manifestations of voluntary contraction in a muscle of the hand under ordinary conditions, and again when the hand has been severely chilled. The cooling is found to lower the frequency of the electrical oscillations from the usual 50 per second to 40 or less. Now the cooling of the hand can have no appreciable effect upon the temperature of the spinal cord. It becomes probable that the impulses are sent with the same frequency to the cold and to the warm muscle. The number per second can in no case be less than the number of the muscular responses, and it may be very much greater.

The strict limit which is set to the number of impulses which can pass along a nerve in one second is determined by the refractory period. After a stimulus has taken effect upon a nerve there is an exceedingly brief interval within which no stimulus can be made effective. The duration of this period is only about 0.0002 of a second. It would theoretically be possible to generate impulses at a rate of 5000 in a second. But this would call for the strongest stimulation, since the period of absolute refusal to respond is followed by a longer interval of relatively low irritability. In view of many facts, Forbes and Rappleye incline to think that the normal frequency of impulses passing along human nerves is not less than 300 per second.

If this is correct, why does the muscle give evidence of a rhythm so much lower? This may be explained by taking into account the refractory period of muscle which is longer than that of nerve. When the contractile mechanism has answered once to stimulation it will be so long in recovering the capacity for action that sev-

eral nerve-impulses may arrive without result. It will respond again when its threshold has fallen to such a level that a particular impulse can break over.

Hunger. An interesting monograph on this subject is that of Carlson.⁴ He has profited by having under observation for some years an intelligent man who has a large gastric fistula. The opening was made to preserve life after an accidental closure of the esophagus which occurred in early youth. It readily admits the introduction of balloons and other apparatus into the stomach. Carlson has confirmed the previous observation of Washburn and Cannon that the sensation of hunger is the accompaniment and presumably the result of intense gastric contraction.

Other human subjects, as well as animals, have been utilized in this series of studies. It has been shown for the dog that young animals have more active hunger contractions than adults. Diabetes induced by removal of the pancreas is found to be characterized by uncommonly severe objective as well as subjective signs of hunger. Fasting does not greatly lessen the motor reactions of the stomach, though the pangs that attend them are blunted after a day or two.

There are many incidental findings. Carlson reports that the temperature sense of the gastric mucosa is fairly accurate. The output of human gastric juice for 24 hours is estimated at 1500 cc. (It is convenient to recall that this is the same as the figure usually given for the urine, and that it has also been made to stand for the daily salivary secretion.) The acidity of the juice in Carlson's subject has been regularly found as high as 0.5% HCl. The suggestion is made that hyperacidity in the experience of the practitioner comes, not from an over-concentrated, but from an over-abundant juice.

The Field of Nutrition. Five years ago the emphasis in this sphere was upon the variable value of proteins from different sources. It appears largely to have shifted to the importance of minor constituents of the diet. The view that beri-beri, scurvy, and perhaps pellagra are deficiency diseases, in the sense that they are caused by the failure of the food to provide certain specific compounds which are required for normal maintenance, is generally familiar. It was at first proposed to describe these essential substances as vitamins. The term would imply that they were nitrogenous and of a fixed molecular type. It has been thought better to call them merely accessory substances. This does not commit one to any narrow conception of their chemical nature.

The possibility that the nutritive worth of foods may suffer by the high temperature applied in cooking has often been considered. The valuable accessories may in some cases be decomposed, or at least denatured, by heat. Recognizing this, it is interesting to record an ob-

servation of Mendel,⁵ that cotton-seed and its products are actually made more suitable for the nutrition of animals when they have been strongly heated. In this instance an injurious property present in the raw food is nullified. We are shown that a sweeping condemnation of cookery, based on the assumption that it always reduces food values, would be quite premature.

Cell Structure. A most suggestive line of experimentation has lately been pursued by Clowes.⁶ It has resulted in giving us a clearer picture of the differences existing between cell surfaces and cell interiors than has been afforded hitherto. The studies have been of emulsion formation and surface tension variations as influenced by electrolytes. No adequate presentation can be included in a summary like the present, but we may indicate the outstanding conclusion of the author regarding the organization of cells.

Two chief classes of constituents have to be distinguished,—those which are soluble in water, and those of a lipid nature which are not thus soluble. It has long been believed that the lipoids of cells are concentrated on the surface. According to Clowes, the fatty material at the surface is continuous, but encloses droplets of water with characteristic solutes. Below the surface of the cells we pass to a region in which the aqueous solution is continuous but holds droplets of fatty material. Crude as the comparison may be, the situation reduces itself to this: the superficial part of a cell is a kind of butter, while the interior is a cream. The existence of these two contrasted phases is apparently conditioned by the distribution of electrolytes in the cell, and a new light is thrown upon the antagonism long known to exist between certain of these, notably Na and Ca. Where the Na effect is dominant the protoplasm tends to organize in the "cream" phase; Ca favors the formation of a "butter."

The doctrines of Clowes are certain to prove fundamental in theories of absorption, secretion, ameboid movement, anesthesia, and many other matters.

The researches which have been reviewed may have seemed rather academic, but the clinical interest and importance of such investigation cannot always be foreseen. Meanwhile there have been some studies which are fully as significant for the clinician as for the physiologist. This is notably true of the observations of Allen⁷ upon the pancreas. These have been brought to the attention of all who are especially interested in the treatment of diabetes by Joslin's admirable book. The experimental procedure may not be so familiar to the general practitioner as to make a brief account superfluous.

The fact that diabetes mellitus is ordinarily the result of a pancreatic defect has been well established for many years. A function of this organ even more necessary than its digestive

contribution is the delivery to the blood of the hormone which makes it possible for the muscles, including the heart, to oxidize sugar. Abundance of this hormone insures a high tolerance for sugar; want of it produces, according to the degree of the lack, a low tolerance or substantial inability to make use of carbohydrate.

Allen lowered the sugar tolerance in dogs by partial removal of the pancreas. The injury may be remarkably extensive before a critical condition is reached. The subsequent career of a dog so dealt with was found to depend on the diet. If carbohydrate is supplied cautiously all may be well. If sugar feeding is forced, there occurs not only glycosuria—the elimination of the larger part of the carbohydrate—but a progressive reduction of the tolerance, much as though more pancreatic tissue were undergoing destruction. This loss of tolerance may proceed to the development of intense diabetes, with acidosis and a fatal issue.

These experiments have been influential in determining the Allen treatment for diabetes. Assuming that the pancreas of the patient is like that of the injured dog, the physician seeks to spare it by the fasting system, and then a diet so regulated as to obviate a return of glycosuria. Seldom has an improvement in practice come so directly from studies on animals. It appears that sugar tolerance can never be built up by, forcing the feeding; so far as it increases at all, it is when the demands on the pancreas are lightened. There is a divergence between this case and the standard principle of developing immunity by insult.

Internal Secretions. There is probably no division of physiology in which the last few years have brought so extensive developments as this. There is no field in which the immediate future promises more important additions to our knowledge. Even a casual reading of Shaefer's⁸ recent summary will confirm both these statements. It may be added that the difficulties to be overcome are far more evident than formerly. This is owing to the discovery of reciprocal relations existing between the tissues which serve the organism by dispensing active substances.

It is now seen that any one of these tissues may reinforce, oppose, or otherwise modify the influence of any other. The number of possibilities increases according to the mathematical principle of permutations. At the same time we are obliged to recognize that organs once regarded as homogeneous are compounded of tissues having unlike properties. The thyroid resolves itself into thyroid proper and parathyroids. The adrenal has a cortex differing in function from its medulla. The pituitary is a two-fold or three-fold structure. Furthermore, the fact of nervous control, which is ever more distinct as observations are multiplied, introduces new factors hard to evaluate. But we may not doubt that the difficulty will prove a

challenge, and that we shall steadily learn more of the "chemical integration," which is so fundamental to the organism.

REFERENCES.

- ¹Hill's work is reviewed in Baylis' "General Principles of Physiology," Longmans, 1916, p. 441.
²Adrian: Journal of Physiology, 1913, Vol. xvi, p. 412.
³Forbes and Rappleye: Am. Jour. of Phys., 1917, Vol. xlii, pp. 228-255.
⁴Carlson: The Control of Hunger in Health and Disease, Chicago University Press, 1916.
⁵Mendel: Reported to the American Physiological Society, New York, 1916.
⁶Clares: Jour. of Phys. Chem., 1916, Vol. xx, pp. 407-451.
⁷Joslin: The Treatment of Diabetes Mellitus, Lea & Febiger, 1916.
⁸Shaefer: The Endocrine Organs, Longmans, 1916.

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SYLLABUS OF LECTURES ON MILITARY MEDICINE.

BY LT. COL. WESTON P. CHAMBERLAIN.

Medical Corps, U. S. Army.

DATES OF DELIVERY TO HARVARD GRADUATE SCHOOL OF MEDICINE, SPRING SESSION, 1917,
4.30 P.M., BUILDING B.

Tuesday, March 27	Lecture	II
Thursday, March 29	Lecture	IV
Tuesday, April 3	Lecture	V
Thursday, April 5	Lecture	VI
Tuesday, April 10	Lecture	VII
Thursday, April 12	Lecture	VIII
Tuesday, April 17	Lecture	IX
Thursday, April 19	Lecture	X
Tuesday, April 24	Lecture	XI
Thursday, April 26	Lecture	XII
Tuesday, May 1	Lecture	XIII
Thursday, May 3, Moving pictures and lantern slides.		
Tuesday, May 8	Lecture	XIV
Thursday, May 10	Lecture	XV
Tuesday, May 15	Lecture	III
Thursday, May 17	Lecture	I
Tuesday, May 22	Lecture	XVI

LECTURE I.*

History of Military Medicine and Its Contributions to Science.

Antiquity of Military Medicine.

Primary purpose of military surgeon is not humanitarian.

Military surgery in Greek and Roman times.

Military medicine in Middle Ages.

Surgical procedures in ancient and medieval times.

Changes caused by introduction of firearms.

Barber-surgeons and low esteem in which they were held.

Growth of sanitary service and mobile hospitals.

Increasing recognition of military surgeons and demand for rank and authority.

Changes in tactics prior to Civil War and inadequacy of sanitary service in meeting greater demands on it.

Letterman and the development of mobile ambulance companies and hospitals.

Improvement in military surgery.

Birth of preventive medicine.

Military surgeons who have left a mark: Paré, Hunter, Larrey, Pirogoff, Laveran, Ross, Craig, Ashburn, Leishman, Donovan, Ashford, Veder, Sternberg, Wood, Ainsworth, Billings, Letterman, Laennec, Beaumont, Reed, Carroll.

LECTURE II.

The Medical Department of the United States Army. Duties Devolving upon the Medical Department in Peace and War.

Constituent Corps of Medical Department.

Medical Corps; appointment and promotion in Corps. (M. M. D. 1-130, and Bulletin 16, War Dept., 1916.)

Medical Reserve Corps; active and inactive list.

Volunteer Surgeons.

Contract Surgeons.

Dental Corps.

Enlisted men, Medical Department; duties, instruction and promotion. (See Drill Regulations and Service Manual Sanitary Troops and Mason's Handbook for Sanitary Troops.)

Female Nurse Corps, Civilian Employees.

General duties of Medical Department in peace. (A. R. 1386 and 1387.)

Sanitation and health of army. (M. M. D. 182-350.)

Care of sick and wounded. Need of wide knowledge on part of medical officers. (Moss.)

Physical examinations. (See index M. M. D. under "Physical examinations.")

Management of military hospitals, post and general. (M. M. D. 204-344.)

Sick call. (M. M. D., 206-209.)

Reports and records. (M. M. D. 398, 399, 558, and 960-965.)

Instruction in Medical Department. (M. M. D. 131-181.)

Medical Supply Depots. (M. M. D. 380. Also see M. M. D. index under "Medical Supply Depots.")

Duties of Medical Department in War. (F. S. R. 329-353.)

Sanitation.

Treatment of sick and wounded.

Furnishing supplies.

Records.

Equipment of Medical Officers and enlisted men of the Medical Department. (M. M. D. 864, 865 and 907.)

LECTURE III.

Records Required of the Medical Department. Supplies for the Medical Department, Methods for Obtaining and Accounting for Same. Samples of Medical Equipment.

Necessity for knowledge regarding records and reports. (M. M. D. 398, 558, and 960-965; A. R. 1386-1492.)

Muster and Pay Rolls. (A. R. pars. 807-810.)

Descriptive lists. (See index A. R.)

Hospital fund and sources of same. (M. M. D. 248-262.)

Hospital laundry. (M. M. D. 265-278.)

Comparison of detachment of enlisted men of Medical Dept. and company of Infantry. A. R. 265-302.)

Morning report of sick and wounded. (M. M. D. 204-208.)

Clinical records. (M. M. D. 407-411.)

Syphilitic and malarial registers. (M. M. D. 200 and 195-197.)

* Published in full in the issue of the JOURNAL for April 5, 1917.

Register cards and report of sick and wounded. (M. M. D. 427-473 and 567-584.)
 Details of preparing cards. (M. M. D. 220.)
 Discharge for disability. (A. R. 159-161.)
 Sick leaves and sick furloughs. (A. R. 57.)
 Sanitary Reports. (M. M. D. 182 and 414-417.)
 Property accountability and responsibility. (M. M. D. 474-527 and 842-959; A. R. 203 and 657. See index A. R. under "Public Property.")
 Expensible and non-expensible property. (M. M. D. note on page 245.)
 Three classes required by the Medical Department, viz., quartermasters, ordnance and medical property. (M. M. D. 862 and 864-901.)
 Invoices, receipts and returns. (M. M. D. 496-510 and A. R. 693-703.)
 Surveys and inspections. (A. R. 710-726 and 678.)
 Property issued to enlisted men for individual use. (M. M. D. 47-49.)
 Principal articles in each of the three classes of property. Equipment A, B and C. (M. M. D. 860.)
 Necessity for Medical Officers to have a knowledge of property and the methods of obtaining and accounting for same.
 (In addition to the references above given, the details for preparing these blanks are printed on the back of each form. For quartermaster and ordnance property and its handling, consult the Q. M. and Ordnance Manuals.)

LECTURE IV.

Examination of Recruits.

Fundamental importance of subject.
 Present methods of recruiting and preliminary requirements.
 Degree of physical development with maximum and minimum limits. (Circular No. 2, War Dept., Nov. 1, 1916.)
 Order of procedure of physical examination.
 Notation of defects in those accepted.
 Importance of mental and moral standards.
 Visual and aural requirements.
 Teeth, circulation and feet.
 Physical requirements in foreign armies.
 Effects of class, age and race on soldiers.
 Proportion of rejections and causes therefor.
 Cadets for Military Academy.
 Purposes of recruit depots.
 Identification records. (Finger prints.) (M. M. D. pars. 392-395.)
 Expense to government of an undesirable recruit.
 Pension claims.
 Possibility for interesting observations while recruiting.

(Causes for rejection and method of examination are given in General Order 66, War Dept., April 18, 1910. The subject is fully discussed in the standard works on military hygiene by Munson, Ashburn, Havard and Woodhull.)

LECTURE V.

Military Hygiene in General.

Includes both personal and public hygiene.
 Selection of sites for military posts.
 Water supplies, quantity needed and method of purifying.
 Sewerage systems.
 Construction of barracks.
 Requirements in the dormitory rooms; necessary

cubic air space, heating and lighting; lavatories and kitchens.
 Military hospitals and guard houses.
 Care of corrales.
 The clothing of the soldier. Influence of material and color.
 Head gear and foot wear. Essentials of a good military shoe. (Military Shoe.) Leggings.
 Equipment of the soldier; its weight; requirements of ideal pack; present U. S. Army pack.
 The army ration; components; amounts of fat, proteid and carbohydrates and fuel value; bearing on military efficiency; care needed in purchase and preparations.

(All of these subjects are fully covered by the appropriate chapters in the standard text-books on military hygiene by Munson, Havard, Woodhull and Ashburn.) At this lecture samples of military equipment will be shown.

LECTURE VI.

Personal Hygiene. Hygiene of Hot and Cold Countries and Hygiene of Troop Ships and Troop Trains.

Personal cleanliness.
 Care of mouth.
 Avoidance of common articles.
 Dietary precautions.
 Care of feet.
 Avoidance of alcohol.
 Venereal peril.
 Characteristics of tropical climates.
 Duration of tropical tours.
 Deleterious influences active in tropics.
 Special personal precautions needed.
 Avoidance of contact with natives.
 Bathing.
 Protection from sun.
 Clothing.
 Requirements in buildings.
 Protection from mosquitoes.
 Tropical tentage.
 Dietary requirements in the tropics. Foods.
 Effects of very cold climates.
 Trench foot. (Treatment of Injuries, page 112.)
 Precaution necessary.
 Sanitation of troop ships.
 Ventilation of ships.
 Transport hospitals.
 Sanitation of troop trains.

(All these subjects are fully covered by the appropriate chapters in the standard text-books on military sanitation by Munson, Havard, Woodhull and Ashburn.)

LECTURE VII.

Marching. Care of Marching Troops and Camp Sanitation.

Need of preliminary training before campaign.
 Nature of the military step.
 Flexion marching.
 Rate of march and distance covered.
 Work performed in marching.
 Factors affecting length of march; size of command, character of roads, weather, manner of conducting marches.
 Drinking on march.
 Foot troubles.
 Selection of camp sites.
 Importance of avoiding crowding.

Water supplies in campaign, and methods of purifying water.
 Hypochlorite method best. (Mil. Surg., March, 1915, page 205.) Quantity of water required.
 Shelter of troops. Varieties of tentage. Sanitary care of tents.
 Winter quarters.
 Disposal of excreta. Latrine boxes and care of latrines. Urinals.
 Garbage disposal by incineration.
 Care of picket lines.
 Protection from flies and mosquitoes.
 Cooking and care of food.
 Bathing.
 Prompt diagnosis and isolation of infectious diseases.
 Sanitary orders and need of coöperation on the part of all concerned.

(These subjects are treated fully in the appropriate chapters of the standard text-books on military hygiene by Munson, Havard, Woodhull and Ashburn.)

LECTURE VIII.

The Diseases Prevailing among Soldiers and Their Prevention. Important Bearing of These on the Outcome of Campaigns.

General consideration.
 Occurrence in fresh levies.
 Classification of causes.
 Typhoid fever and its seriousness in the past.
 Method of dissemination in camp by flies, contact and dust. General method of sanitary control. Specific methods of control by anti-typhoid vaccination. Typhoid vaccination does not favor tuberculosis. Tetra-vaccine. (Mil. Surg., Oct., 1916, page 361; Mil. Surg., Feb., 1916, page 214.)
 Diarrheal diseases and dysentery.
 Asiatic cholera.
 Insect-borne diseases.
 Great importance of malaria in campaigns. Life history of mosquitoes. Three steps necessary to suppress malaria. Yellow fever. Typhus or camp fever. Methods of destroying lice.
 Importance of measles in armies.
 Smallpox.
 Miscellaneous infectious diseases.
 Alcoholism and its results.
 Venereal disease as a factor in peace and war. Prophylaxis of venereal diseases.

Scurvy.
 Beriberi and its prevention.
 "Irritable heart of the soldier."
Pied forcé.
 Insanity in war.
 Influences of camp diseases on history—ancient and modern.

(All these subjects are fully covered in the standard text-books on military hygiene by Munson, Havard, Woodhull and Ashburn and by many special articles, particularly in the *Military Surgeon* and the *Journal Royal Army Medical Corps*.)

LECTURE IX.

Medico-Military Statistics. Influence of Age, Length of Service, Station and Race. Acclimatization in the Tropics.

General consideration of medico-military statistics, admissions, deaths, discharges, total losses, con-

stantly non-effective, days lost.
 Comparison of actual numbers lost from disease and from wounds. Not a just comparison. Rates per thousand of deaths give a truer idea of sanitary conditions.

Comparison of military and civil morbidity. Reasons for differences. Malingering. (M. M. D. 456-q.)

Military absenteeism. (Mil. Surg., June, 1912, p. 619.) Its cause and very great importance; relation of medical department to absenteeism. Methods of limiting this evil.

Influence on morbidity of season and locality. Influence of age.

Morbidity and mortality high among young soldiers. Morbidity and mortality decrease with length of service. Demography. (Mil. Surg., 1916-1917.)

Mortality much higher for negro and Filipino troops than for white troops.

Influence of beriberi on Filipino races.

Influence of race on circulatory diseases, kidney diseases, rheumatism, respiratory diseases, venereal disease, yellow fever, beriberi, typhoid, alcoholism, sunstroke and frost bite, plague, smallpox.

Differences among branches of the Caucasian race. Acclimatization in tropics, and influence of race on same.

(These subjects are covered in the standard text-books on military hygiene, particularly Munson's. Much valuable information on these matters is contained in the annual reports of the Surgeon-General of the Army and in various articles published in the *Military Surgeon*.)

LECTURE X.

Military Weapons and the Character of the Wounds They Produce. Gas poisoning.

Definition of "gunshot wound" in military usage.
 Development of the military rifle. Description of U. S. Army rifle,—a typical small caliber high-powered weapon. (Description in U. S. Magazine Rifle.)

Form and composition of bullets. Spitz bullets. (Lagarde, pages 1-113.)

Ballistics and danger zones. (Straub, pages 1-55.)

Influence of shape and composition on character of wounds produced. Spitz bullets not humane.

Machine guns.

Automatic pistols. Field guns.

High explosive shells and shrapnel.

Types of hand-grenades.

Terrestrial mines.

Bayonet wounds.

Character of wounds produced by round lead bullets, conoidal lead bullets and modern small caliber steel jacketed missiles.

Explosive effects and explanation of same.

Increasing importance of artillery wounds. Character of injuries from shell and shrapnel.

Grenade wounds.

Asphyxiating gas and treatment of condition. (Treatment Injuries in War, page 115; Fauntleroy, pages 26 and 116.)

Proportion of killed to wounded.

Proportion of wounds in different regions of body.

Percentage of recoveries.

(Much of this latter information has been obtained from current medical literature. Practically no official information in regard to European War is available.) (Most of the points in this lecture are covered by Lagarde's book on Gunshot Injuries.)

LECTURE XI.

Nature and General Treatment of Wounds in War.

Symptoms of G. S. W.

Pain, shock, thirst and hemorrhage. Primary external and internal hemorrhage. Secondary hemorrhage.

Lodgement of missiles.

Factors influencing infection. Sources of contamination of wounds. Unfavorable environment favors infective process.

Gas-bacillus gangrene; favored by necrotic tissue and hematomata. Symptoms and treatment.

Tetanus.

Other infections.

Treatment of wounds in general.

First aid dressings. (M. M. D. pars. 945-946.)

Need of food.

Care of shell wounds.

Wounds of the head; importance of prompt operation.

Value of dental treatment.

Wounds of neck and spine.

Chest wounds and their treatment. Importance of rest.

Abdominal injuries. Difficulties of operative treatment in war.

Vascular injuries; frequency of traumatic aneurysms.

Joint injuries; benign with cylindro-conoidal bullets.

Compound fractures; great frequency and importance.

Points wherein military surgery differs from civil surgery.

(Most of these points are covered by Lagarde in *Gunshot Injuries*, 1914, Wm. Wood & Co., and in an article entitled *Military Surgery*, *Medical Times*, Jan., 1916. Special phases are covered by recent articles in various journals.)

LECTURE XII.

Organization of the Army, Especially the Medical Department.

National land forces of the United States, regulars, militia, volunteers. (F. S. R. pars. 1-5.)

Officers, non-commissioned officers and privates. (A. R. pars. 7-12.)

Line and staff corps and departments. (Bulletin 16, W. D. June 22, 1916.)

Organization of a regiment of Infantry, regiment of light artillery.

The Coast Artillery Corps.

Brigades.

Staff Corps.

Quartermaster Corps.

General Staff Corps.

Mobile army.

Divisions.

Field armies.

Armies.

Lines of communications

Organization and size of a division.

(All these are prescribed by Bulletin 16, W. D. 1916, and T. of O.)

Regimental Sanitary Detachment. Ambulance Companies. Camp Infirmaries. Field Hospitals. Evacuation Hospitals. Evacuation Ambulance Companies.

American National Red Cross Units.

Rest Stations. Base Hospitals. Base Supply De-

pots. Convalescent Camps. Contagious Disease Hospitals.

Hospital trains, boats and ships.

Casual Camps for sanitary troops.

Field laboratories.

Surgeon-General. Department surgeons. Division surgeons.

(All these medical department organizations are described in pars. 585-841 M. M. D.)

LECTURE XIII.

Lines of Sanitary Aid in War. Drill of Sanitary Troops. Evacuation of Wounded.

"A." Zone of advance.

Sanitary units concerned. (M. M. D. 586 and 627-750.)

Regimental service.

The sanitary train. (M. M. D. 651-715.)

Division surgeon.

"B." Line of communication, advance, intermediate and base groups.

Evacuation hospitals and evacuation ambulance company constitute sanitary column. (M. M. D. 751-756.)

Base hospitals, convalescent camp, contagious hospital, hospital trains, boats and ships, casual camps, sanitary squads, field laboratories, rest stations, base and advance supply depots, evacuation hospitals and evacuation ambulance companies. (M. M. D. 757-827.)

"C." Service of the interior; general hospitals, camp hospitals, convalescent camps, supply depots, trains, etc. (M. M. D. 586.)

Drill for sanitary troops. (Drill Regs.)

Essential for prompt coördinated action.

Dispositions in planned defense and in trench warfare.

Résumé of service in war. (M. M. D. 831-841.)

LECTURE XIV.

Tactical Knowledge Needed by a Medical Officer. Map Problems.

Need of tactical knowledge by medical officer.

Influence of developments in armaments on function of medical department.

Tactical knowledge required.

Orders.

Specimen of field order. Paragraph 4.

Maps and map reading. (Sherrill.) Contours.

Shelter.

Angles of fire and overshots. Visibility.

Statistics as to number of wounded to be handled.

Classes of wounded: non-transportable, transportable and able to walk.

Amount of transportation allowed a division.

Time required to remove wounded. Formulas for same.

Map exercises.

(These subjects are covered by the following books: *Field Service Regulations*; *A Study in Troop Leading and Management of the Sanitary Service in War*, Morrison and Munson; *Principles of Sanitary Tactics*, Munson; *Medical Service in Campaign*, Straub.)

LECTURE XV.

The Geneva and the Hague Conventions. The Red Cross Society.

Growth of humanitarianism in conduct of war.

Declaration of Paris, General Order No. 100.

Congress of 1863 in Geneva.
 First Geneva Convention in 1864.
 Second Geneva Convention in 1906.
 Declaration of St. Petersburg.
 First Peace Conference at The Hague in 1899.
 Second Peace Conference in 1907.
 The conventions formulated.
 Poisoning and use of projectiles causing unnecessary suffering forbidden.
 International authority of the Geneva and The Hague Conventions.
 Details of Geneva Convention provisions.
 Emblem and the marking of sanitary personnel and material.
 Red Crescent. (Rules of Land Warfare covers all above points.)
 Volunteer aid societies.
 Convention at The Hague adopted the principles of the Geneva Convention to maritime warfare.
 Marking of hospital ships.
 American National Red Cross. (M. M. D. pars. 535-538.)
 Units must be attached to armies and subordinate in order to military rules to receive recognition.
 Functions of Red Cross. (M. M. D. par. 536.) (Act of Congress, January 5, 1905, 33 Stats. 300.)

LECTURE XVI.

Medico-Military Preparedness.

Our present military status.
 Need of at least one million men if we are attacked.
 Present inadequacy of Medical Corps.
 Number of medical officers needed for administrative positions.
 Sources of supply are Medical Corps, Medical Reserve Corps and Militia Medical Corps. They are insufficient. Medical Reserve Corps as yet little trained.
 Fifty thousand to one hundred thousand enlisted men of the medical department needed.
 No class in civil life trained for technical medical department duties.
 Medical department work begins immediately on mobilization.
 Shortage of independent sanitary units.
 Reserve supplies inadequate through failure of Congress to appropriate money.
 What has already been done toward medico-military preparedness; instruction for Medical Corps, Medical Reserve Corps and militia.
 Council of National Defense.
 What supplies we have ready.
 Professional interest in preparedness.
 Benefit to our surgeons of experience in European War.
 Real preparedness demands larger Medical Corps; larger and better trained Medical Reserve Corps; larger enlisted force, Medical Department, and better pay for it; a reserve enlisted force, Medical Department; more dental surgeons; placing of supply depots at points safe from attack; obtaining of much larger reserves of supplies.

BOOKS REFERRED TO ABOVE IN ABBREVIATED FORM.
 (All references to service manuals are by paragraphs.)

Drill Regs.—Drill Regulations and Service Manual of Sanitary Troops, 1914.
 F. S. R.—Field Service Regulations, 1914.
 A. R.—Army Regulations, 1913.

T. of O.—Table of Organizations, 1914.
 M. M. D.—Manual Medical Department, 1916.
 Bulletin 16, War Dept., 1916.
 Rules of Land Warfare, 1914.
 Description and Rules for Management of U. S. Magazine.
 Rifle, Model 1903, Caliber 30, 1908.
 Fauntleroy—Medico-Military Aspects of European War.
 Quartermaster Manual.
 Ordnance Manual.
 Court Martial Manual.
 Regulations for General Hospitals.
 (From Government Printing Office, Washington, D. C.)

Lagarde—Gunshot Injuries, 1914, Col. Louis A. Lagarde, Wm. Wood & Co.
 Treatment Injuries in War, 1915, Wyman & Sons, 28 Breems' Bldg., Fetter Lane C. C., London.
 Mil. Surg.—The Military Surgeon, Washington, D. C.
 Finger Prints—"Classification and Uses of Finger Prints," by E. R. Henry, Detective Publishing House, Chicago, Ill.
 Military Hygiene, 1901. Col. E. L. Munson, Wm. Wood & Co.
 Military Hygiene, 1914. Col. Valery Havard, Wm. Wood & Co.
 Military Hygiene, 1909. Maj. P. M. Ashburn, Houghton, Mifflin & Co.
 Military Hygiene, 1909. Col. A. E. Woodhull, John Wiley & Sons.
 Mason's Handbook—Handbook for Sanitary Troops, 1917. Col. C. E. Mason, Wm. Wood & Co.
 Moss—Field Service. Capt. J. A. Moss. Agents: U. S. Cavalry Association, Fort Leavenworth, Kansas.
 Straub—Medical Service in Campaign. Col. Paul F. Straub, Blakiston's Son & Co.
 Sherrill—Military Map Reading. Sherrill. Agents: U. S. Cavalry Association, Fort Leavenworth, Kansas.
 Military Shoe—The Soldier's Foot and the Military Shoe. Col. E. L. Munson. Agents: Cavalry Association, Fort Leavenworth, Kansas.
 A Study in Troop Leading and Management of Sanitary Service in War. Morrison and Munson. Agents: U. S. Cavalry Association, Fort Leavenworth, Kansas.
 Principles of Sanitary Tactics. Col. E. L. Munson. Agents: U. S. Cavalry Association, Fort Leavenworth, Kansas.

SYLLABUS OF LECTURES ON NAVAL MEDICINE AND HYGIENE.

By SURGEON G. F. FREEMAN, U. S. NAVY.

DATES OF DELIVERY TO UNDERGRADUATES OF THE HARVARD MEDICAL SCHOOL, TUFTS COLLEGE MEDICAL SCHOOL AND BOSTON UNIVERSITY MEDICAL SCHOOL, AND MEMBERS OF THE PROFESSION. 4.30 P.M.

Monday, March 26	Lecture	I
Monday, April 2	Lecture	II
Monday, April 9	Lecture	III
Monday, April 16	Lecture	IV
Monday, April 23	Lecture	V
Monday, April 30	Lecture	VI
—	Lecture	VII
—	Lecture	VIII

NAVAL LECTURE I.

Naval Hygiene. General. Submarines and "Patrols."

Submarines, general qualities of.

"Patrol" boats, general, structure, size, equipment, etc., and manoeuvres.

Hospital Ships for work with the Naval Coast Defense Reserve.

Lantern slides, general views of Navy, with explanatory notes as to hygiene on board ship.

NAVAL LECTURE II.

Preparation for Battle on Board Ship.

Organization, utilization, evacuation of wounded. Demonstration of navy stretcher and "shell wound" dressings.

Preparation for battle; stations.

Disposition of Hospital Corps.

Instruction of crew.

Transportation of wounded and resuscitation of unconscious.

Location and functions of "dressing stations."

Detailed organization for relief of wounded on board ship.

Emergency drills.

Experience of English in naval battles.

First aid on patrol boats.

NAVAL LECTURE III.

Hospital Ships. Construction. Functions. Hague Convention. Laws Governing Hospital Ships.

Functions of hospital ship, as the U. S. S. *Solace*. General description and diagrams of plans of new hospital ship being built for the Navy.

Notes on transport ships.

"Rescue ships."

Hague Convention, rules, etc.

Special devices, as bunks, trays, lockers, for use on board ships.

Ambulance motor boats.

NAVAL LECTURE IV.

Special Accidents and Diseases on Board Ship.

Description of diseases, including tropical diseases. Notes on hygiene.

Notes on the physical examination of the "normal individual."

Aviation notes.

Intoxication by detonation on board ship.

Powders.

Gases, etc., carbon dioxide, nitrogen monoxide, etc.

Treatment of gas poisonings.

Ventilation and special submarine ventilation.

(Print of general ventilating system of submarine to each member of class.)

NAVAL LECTURE V.

Additional Notes on Ventilation of Submarines. Purification of Air and Use of Oxygen. Special Features of Naval Life and Hygiene.

Lantern slides and illustrated pamphlet.

NAVAL LECTURE VI.

Naval Medical Corps.

Organization and duties in general ashore and afloat.

Notes on hygiene of different types of ships, as submarines, torpedo boat destroyers, scout cruisers, battle cruisers, and battleships, with notes as to construction and size.

NAVAL LECTURE VII.

Health of Navy and Naval Health Records.

Notes on recruiting.

Naval physical requirements and physical examinations.

Exact method of examining a recruit.

(A copy of Naval Health Record will be given to each member of class for reference during the lecture.)

Disabilities which disqualify for enlistment or enrollment.

Waivers on physical disabilities.

NAVAL LECTURE VIII.

Daily Routine Duties of Medical Officers on Board Ship.

"Sick call," drills, etc.

Special duties ashore and afloat.

Duties as members of Medical Examining Boards.

Inspections.

Duties in regard to the health of the crew.

The following books can be used for reference:

Naval Hygiene. Gatewood, P. Blakiston Son & Co. Handy Book, Hospital Corps, U. S. Navy, 1917 edition. Price, 50 cents. At the Naval Medical Supply Depot, Brooklyn, N. Y.

Naval Medical Bulletin. Published quarterly, under the direction of the Surgeon-General, U. S. Navy. Bureau of Medicine and Surgery, Navy Department, Washington, D. C. Can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. Subscription, \$1 a year; single copies, 25c. It is furnished free to members of the Naval Medical Corps and the Naval Coast Defense Reserve.

Military Surgeon. Army Medical Museum, Washington, D. C. By membership in the Association of Military Surgeons of the U. S., or subscription, \$3.50 a year; single copies, 40 cents.

Braisted—Naval and Medical Sanitary Features of the Russo-Japanese War. Government Printing Office, Washington, D. C.

Physical Examination of Recruits. Circulars, etc. Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Fauntleroy—Medico-Military Aspects of the European War. Government Printing Office, Washington, D. C.

Instructions Medical Corps, U. S. Navy. Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

NOTE.—Officers in the Naval Coast Defense Reserve, Class 4, will be furnished certain books and circulars of instruction on application to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., as "Naval Medical Correspondence Course"; "Extracts from U. S. Navy Regulations and Navy Instructions" (Government Printing Office via the Bureau of Medicine and Surgery). Reference handbooks, as first aid and hygiene, are issued to ships on fitting out and to permanent shore stations, but not to temporary recruiting or enrolling offices.

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THURSDAY, APRIL 26, 1917

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An editor will be in the editorial office daily, except Sunday, from twelve to one-thirty p. m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of paper. The Journal will furnish one hundred reprints free to the author, upon his written request.

The Journal does not hold itself responsible for any opinions or sentiments advanced by any contributor in any article published in its columns.

All letters containing business communications, or referring to the publication, subscription, or advertising department of the Journal, should be addressed to

ERNEST GREGORY, *Manager*.

126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

THE MASSACHUSETTS GENERAL HOSPITAL.

THE one hundred and third annual report of the Massachusetts General Hospital, now published in two volumes, makes the following statement regarding its financial situation: "The trustees are most grateful to all the friends who by their generous gifts have helped on the work of the hospital during the past year, but it is necessary to call the attention of the community to the great needs of the hospital, and its very serious financial danger. Not only has the increased cost of everything used increased the financial burden, but a more complete medical care involves a larger expenditure. Added to this, there has been an attempt to impose on the hospital a tax amounting to \$53,000, litigation as to which is now pending. This attempt involved, your Trustees believe, a departure from the policy which has existed in this Com-

monwealth from early days, and is a direct menace to every charitable and educational institution in the State. The result of all the causes above referred to, is a deficit in the current expense account of about \$202,000, or, if we omit the \$53,000 paid for taxes, then the deficit is \$149,000. The Trustees believe that the vital character of the service rendered by the hospital, its far-reaching influence for good, and the thoroughness and effectiveness of its work, affecting as it does, directly or indirectly, the health and safety of the whole community, constitute the strongest reasons for a liberal and increased support, and if the service hitherto rendered by the hospital is to be continued, the expense cannot be diminished, and a large endowment is a matter of necessity."

The year past has seen the dedication of the Moseley Memorial Building and the operation of the Consultation Clinic, which was established to give to patients who desired to pay for their medical care, but who were not able to afford the services of specialists and the use of the expensive and complicated apparatus possessed by a great hospital, the same privileges enjoyed by those who do not pay. The Clinic has achieved a real success, and has proved itself of value to the great majority of physicians who have used it. One thousand four hundred and eighty-six patients have been referred to this clinic by 687 physicians. It is hoped that in the future some beds can be established for patients of the same class. In 1864 the trustees of the General Hospital spoke of the possibility that in the future a building might be erected by the hospital and devoted to pay patients, for whom the hospital has always made some provision, such building to combine the comforts of a home with the advantage of being attached to a well-appointed and well-regulated hospital. The trustees feel that the time has now arrived for such a building, and that there is no reason why persons of means should be debarred from the hospital privileges which are accorded to those without means. A pay ward is accordingly in process of construction and will probably be ready for use in the present year. Here patients may employ their own physicians, but get the benefit of connection with the hospital, and reimburse the hospital for all its expense. The hospital will thus be giving the use of its facilities to all portions of the community, but, besides such direct service, it is already benefiting the whole community through the training which it gives to

surgeons, physicians, and nurses for future work in private, institutional, or social service, and also through the research work which it is carrying on, and which inures to the benefit of all mankind.

Another branch of public service has been developed during the past year by the establishment at the hospital of the nucleus for a base hospital. This has been organized under the Red Cross, and consists of a medical staff of 26 physicians, 2 dentists, 50 nurses, 25 nurses' aids, 25 in reserve, 1 chaplain, 77 male administrative personnel, and 14 civilian employees. There can thus be automatically provided a 500-bed base hospital for the service of the government.

Attention is also directed to the need of a new home for convalescents, particularly persons with moderate means, as an essential adjunct to the hospital.

"This building should be erected in connection with the General Hospital, for patients who should pay something to the physicians for their medical and surgical care, but who are unable to pay the full price for care in the new private ward which we are building. Such a hospital would meet a want which is greatly felt, as people of moderate means are getting today the least efficient care in case of sickness of any class in the community. This group of individuals must often be ill in their homes, dependent upon physicians who cannot provide the necessary laboratory tests and scientific examinations which are readily available in a general hospital. I would make an urgent appeal to the generosity of the community for a special gift to erect and endow a building for this object."

THE CENTRAL CONTROL OF REFLEX ACTION.

MANY of our faculties whose powers are credited to inherent special constitution, and whose control is attributed to reflex mechanisms, are the results almost entirely of actions subordinated to the higher centres. They are expressions of the mind formed as a result of stimuli received therein through normally acting senses, together with either the conscious or subconscious,—but always positive,—effort to discipline the senses to harmonize in the accomplishment of an end—the development of the mind. Education is not merely an aimless abstract attempt to stimulate the brain through the senses with a great variety of stimuli, that is, with

funds of information, but rather to make the senses thus stimulated harmonize and coöperate in their action to the end of impressing the mind and developing the brain. Unless there is this discipline of the senses and harmony of the centers during action, and, above all, a curbing of their individual exuberances, mental disturbances must inevitably occur. It is the fault of many of the methods of modern education that there is a lack of harmony in the nature of the facts and theories taught, and in the general lack of understanding of the absolute necessity for discipline and harmony in the normal mind and body, just as it is necessary for the integrity of the social body. No mind is more poorly trained than one which has acquired a heap of facts but with little interrelation.

Apparently, while the discipline of the centers and the senses results in the ability to do things with more ease and without so much conscious or deliberative effort—in other words, while proper education apparently reduces central action or knowledge to reflex or spinal action—it is really not so; the central is as much as ever in control, but acting subconsciously, from habit, so to say. On the contrary, the greater the mental development, the more reflex spinal actions are rendered central or conscious. Even if a particular action would have taken place from reflex or spinal control, its transfer to central control is an advance in the development of the individual. Education, then, in its relation to mental development, has for its main object the transfer of reflex action to central expression. Education makes conduct and action subconscious in control, but not, as appears on the surface, reflex in nature.

In proper discipline of the senses, every individual sense is subordinated to the sense in action. Any individual reflex tendencies which might disturb this harmony is suspended. A trained observer sees more than an untrained one, even though the former has very much less acute vision, because he has succeeded in disciplining all the senses, no matter what their ordinary functions, to suspend all individual action to help him see. The more central is the control under which we act, the more deliberate are our actions, and, of course, the more efficient. Moreover, reflex action and emotion go hand-in-hand. Indeed, the expression of emotion may be called an inner reflex action. In the same manner as when our actions are influenced by an undue

amount of the reflex, our deliberation may be influenced by an undue amount of emotion; and both are rendered by them the less trenchant. Just as we are trying to be ruled less by the reflex in action, just so we are trying to replace and to convert emotion into conscious deliberation.

There is hardly an action of whatever kind or in whatever individual, no matter what his mental development, and no matter how reflex and automatic it appears, that is not more or less under central control. Even in such spinally controlled actions as the sphincteric and the sexual, there is more central control than is commonly understood. The evolution of the human species tends here especially to a greater control and a more rapid eradication of the reflex influences. The sole activity of the spinal cord—the seat of reflex control—does not suffice for reflex function. If it did, these reflexes would occur with the same force and with the same rapidity, even when the higher centers were engaged. This, of course, is not so. In the case of the sexual reflex, there is no greater stop to it than to have the mind otherwise engaged. When the mind is not in actual control there is little likelihood of the “independent” spinal reflex, sexual action. The same is too often true of the vesical and rectal functions—and with bad results. Constipation, for example, is as much a mental as a physical condition. In general it can be said that reflex action is suspended directly in proportion to the intensity with which the mind is occupied and not in control.

It is the aim of the medical profession to advise and to urge as their share of contribution to the physical and mental development of the human species,—and its evolution,—the training out of the reflexes in favor of central, conscious control, the training to greater discipline and harmony of all the senses and centers, and, finally, the training to greater scope of individual senses as well as a training of all individuals for better discipline generally.

PREPARATION IN MILITARY AND NAVAL MEDICINE.

At a recent meeting of the Sub-Committee on Military Education and Training Camps of the Auxiliary Committee of National Defense of Boston, it was decided to urge the Secretaries of the various District Societies in Massachusetts

and the neighboring states to attempt some definite line of work in connection with instruction in military medicine.

We are told that the proportion of medical men from Massachusetts alone will be approximately one thousand men. This means that we must have a marked increase of the number of enrollments in the Officers' Reserve Corps.

In order to render efficient service, it would seem best to procure the services of some retired officer or member of the National Guard or other individual qualified to assume charge, and under his direction conduct a series of meetings for instruction purposes. In this connection, the committee offers a syllabus of the lectures being given under the auspices of the Harvard Graduate School of Medicine by Lt. Col. Weston P. Chamberlain of the Medical Corps, U. S. Army, and by Surgeon G. F. Freeman, U. S. Navy. This syllabus might well be used as a basis for the suggested course, although local conditions may necessitate a considerable departure from the actual course outlined.

The syllabus of these lectures on military and naval medicine and hygiene is published in full in another column of this issue of the *JOURNAL*, and later will be available in reprint form.

THE PARTICULAR ATTENTION OF THE SECRETARIES OF DISTRICT MEDICAL SOCIETIES IS HEREWITH CALLED TO THIS MATTER, WHICH IS OF VITAL IMPORTANCE IN THE PRESENT EMERGENCY. ESPECIAL ATTENTION IS DIRECTED ALSO TO THE MATERIAL OF THE FOLLOWING EDITORIAL NOTICE.

CARD CATALOGUE OF MASSACHUSETTS PHYSICIANS.

SUB-COMMITTEE No. 1, on Mobilization of the Medical Personnel of Massachusetts, is working together with the Sub-Committee of the Massachusetts Committee for Public Safety, in an effort to obtain a complete card catalogue of every physician in Massachusetts. We desire, through these columns, to emphasize the importance of this catalogue and to beg every physician to fill out completely the card which he will shortly receive, and mail it as soon as possible in the enclosed addressed envelope.

The great need continues to be for additional doctors in the regular Medical Corps of the Army and of the Navy, and in the Reserve Corps of the Army and the Navy, and the most important duties for the immediate future will be in the matter of examining recruits. Those

who cannot volunteer can help greatly by taking charge of the patients of absent doctors and dividing the fees in equal shares with the families of the doctors who have gone to the front. All can aid materially by joining the Red Cross organization.

From time to time further communications will appear in the BOSTON MEDICAL AND SURGICAL JOURNAL.

MEDICAL NOTES.

FORTHCOMING MEETINGS.—The American Pediatric Society will hold its twenty-ninth annual meeting at the Greenbrier, White Sulphur Springs, W. Va., on May 28, 29, and 30, 1917. An interesting program has been arranged. Boston men who will read papers are Dr. J. L. Morse, Dr. S. B. Wolbach, Dr. Charles Hunter Dunn, Dr. Fritz B. Talbot and Dr. Richard M. Smith.

The annual meeting of the Alienists and Neurologists will be held in Chicago, Ill., July 10, 11 and 12, under the auspices of the Chicago Medical Society. A program covering the subjects of hospital care of the insane and various aspects of insanity is being arranged.

WAR NOTES.

WAR RELIEF FUNDS.—On April 21 the totals of the principal New England relief funds for the war reached the following amounts:

Belgian Fund	\$811,792.71
French Wounded Fund	218,010.31
Armenian Fund	177,271.33
French Orphanage Fund	93,447.64
Boston Ambulance Fund	73,519.43
Polish Fund	68,570.72
Massachusetts Red Cross	54,391.58
LaFayette Fund	26,548.03
French Phthisis Fund	13,661.04
Friends' Relief Fund	12,445.77

PREPARATION AT COLUMBIA.—Columbia University has offered to erect a great emergency hospital on Columbia Oval in the Bronx, with accommodation for 1000 beds. It is planned to teach military surgery and camp organization at the hospital. Dean Lambert has stated that the college would be willing to graduate its senior class in January next, instead of May, in order to release its students for field service. Boards and committees have been appointed for the enlargement of St. Luke's Hospital, and are called St. Luke's Hospital Auxiliary for Home Defence. The general purpose is to make the Hospital similar to the American Ambulance in Paris. Columbia University has donated part of its South Field for the use of the Hospital.

Through its board of directors, the New York

Ophthalmic Hospital has offered the use of its buildings and equipment to the Secretaries of War and Navy, "together with the services of such members of the attending surgical staff as may be desired for the treatment of diseases and injuries of the eye, ear, nose and throat."

RELIEF WORK IN BELGIUM.—The following statement, made in London, at the headquarters of the Commission for Relief in Belgium, has been given out by the Associated Press:

"We can state positively that not a single carload, much less a trainload, of the commission's provisions, once started for Roubaix, or any other town occupied in France, ever failed to arrive. Not only is this true, but the actual figures of the receipt and consumption of the food made out and attested by the French local committee at Roubaix and checked by the commissions of foodstuffs sent in by the commission correspond within a few pounds in the total of many tons with the figures of the amount of foodstuffs forwarded by the commission from Holland and Brussels to this district.

"In fact, the total receipts of the whole 1,882 French communes provisioned by the commission show a loss of but two-tenths of 1% on 485,000 tons of foodstuffs sent in by the commission from Holland and Brussels.

"With regard to the statement of Mr. Whitaker, that the Germans had taken American white flour and substituted rye flour adulterated with sawdust, the facts are as follows:

"This German flour was not substituted for any American flour, but was provided by the Germans from the native French crop as an addition to the American ration, and was the same flour mixture of rye and wheat as furnished to the German soldiers. This addition amounted to 100 grammes daily per person until November, 1916, and now is 180 grammes daily.

"The commission feels that the dissemination of unverified reports of this kind tends to destroy the confidence of the charitable world in the work of distribution and, therefore, directly decreases the amount of food sent to these people, who, even according to Mr. Whitaker's reports, would be starving but for this food."

DEDICATION OF RED CROSS BUILDING.—The dedication of the new \$800,000 American Red Cross building in Washington will take place on May 12. The occasion will mark the first mobilization of uniformed women war workers ever held in the United States. The women will wear for the first time the new uniform which is to be adopted for home service of the Red Cross. A notable feature of the program will be the dedication of the three memorial windows given to the Red Cross by the women of the civil war organizations. One window is the gift of the United Daughters of the Confederacy, another the gift of the Women's Relief Corps of the North, and the third window is the gift of both organizations.

BETH ISRAEL HOSPITAL OFFERS SERVICE.—The executive board of the Beth Israel Hospital Association, Boston, has voted to place the facilities of the institution at the disposal of the federal authorities in caring for sick and wounded soldiers and sailors. The medical staff comprises some of the leading physicians and surgeons of the city.

HARVARD DENTAL UNIT.—The unit at the Harvard Dental School has cared for the teeth of 300 National Guardsmen. More than 1000 fillings have been inserted, while teeth that could not be saved were extracted by the regular surgical staff. During the Easter vacation there will be a clinic for the exclusive use of the soldiers. All members of the profession who wish to volunteer to do work for the soldiers in their private offices should send their names to George H. Payne, 29 Commonwealth Avenue.

CONFERENCE IN AID OF AMERICAN RED CROSS.—President Wilson has invited a group of leading men from different parts of the country to meet in Washington, April 21, to consider means of financing the American National Red Cross for its responsibilities toward soldiers and non-combatants. The President proposes to designate a day in May on which the entire nation shall concentrate its attention toward this matter. F. L. Higginson, Jr., will represent Boston.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending April 7, 1917, the number of deaths reported was 256, against 245 for the same period last year, with a rate of 17.28, against 16.80 last year. There were 43 deaths under one year of age, against 35 last year, and 82 deaths over 60 years of age, against 71 last year.

The number of cases of principal reportable diseases were: diphtheria, 79; scarlet fever, 36; measles, 188; whooping cough, 4; typhoid fever, 4; tuberculosis, 48.

Included in the above were the following cases of non-residents: diphtheria, 11; scarlet fever, 9; measles, 3; tuberculosis, 11.

Total deaths from these diseases were: diphtheria, 9; tuberculosis, 31.

Included in the above were the following deaths of non-residents: diphtheria, 3; tuberculosis, 2.

MILFORD HOSPITAL.—Milford Hospital is to have a new ward for maternity cases. Mr. and Mrs. B. H. B. Draper have offered to stand the expense of changes necessary to accomplish this end.

PSYCHOPATHIC HOSPITAL AT SHERBORN.—Efforts are being made to establish a hospital for the care and study of psychopathic women in connection with the Reformatory for Women at Sherborn.

BOSTON CITY HOSPITAL.—A department devoted to the scientific treatment of delirium tremens and a maternity ward with adjoining nursery are proposed to be established at the Boston City Hospital. Plans are also proposed to open in West Roxbury, the first hospital in America devoted entirely to the treatment of whooping cough.

BROCKTON HOSPITAL. Dr. Joseph H. Lawrence has been elected a member of the medical staff of the Brockton Hospital to fill the vacancy caused by the death of Dr. A. V. Lyon.

EPIDEMICS IN VARIOUS TOWNS AND CITIES OF MASSACHUSETTS.—Measles has been epidemic in New Bedford and Randolph; both measles and mumps exist in Northampton. Ashburnham has an epidemic of mumps and Brockton reports 96 cases of mumps and several cases of scarlet fever. Scarlet fever rages in Middleboro, and diphtheria is somewhat prevalent in Natick.

SALEM HOSPITAL.—The annual report of the Salem Hospital shows a total of 1,369 treated during the year, only 86 of which died. There were 171 births.

BABY HYGIENE ASSOCIATION.—At the annual meeting of the corporation of the Baby Hygiene Association held on March 27, the following officers were elected:

Dr. John Lovett Morse, president; Charles E. Mason, vice president; Hugh Nawn, secretary, and Charles E. Cotting, Jr., treasurer.

Mrs. Henry Copley Greene, Miss Esther G. Barrows, Ernest B. Dane and John W. Halliwell were elected members of the board of trustees for three years. Dr. Ralph C. Larrabee, Seymour H. Stone and Miss Katherine P. Hewins were elected members of the corporation.

WING MEMORIAL HOSPITAL.—The Board of Managers of the Wing Memorial Hospital, Palmer, recently organized with Dr. M. B. Hodskins, chairman. Dr. W. B. T. Smith, of Bondsville, was elected to fill a vacancy on the board caused by the resignation of Dr. Damon of North Wilbraham.

NOBLE HOSPITAL.—The hospital aid association has started a campaign for the proposed nurses' home at the Noble Hospital, Westfield.

MEASLES IN MERRIMAC.—One hundred and twenty-five cases of measles have been reported in Merrimac this winter.

SPRINGFIELD PHYSICIANS IN HOSPITAL RESERVE.—Ten Springfield physicians have been given commissions as first lieutenants in the medical officers' reserve corps of the United

States army. They are Drs. H. F. Byrnes, P. M. Cort, E. L. Davis, J. W. Maloney, Philip Kilroy, Charles F. Lynch, James E. Quinn, Erdix T. Smith, Arthur Horrigan and John M. Tracy. Two from Chicopee, Medical Examiner John C. Gallagher and Associate Medical Examiner L. E. Mannix, have also received commissions of this sort. Dr. George Corcoran and Dr. Edward Holton, of West Springfield, are on the navy reserve list. Among those who are now making applications to take the examination for appointment to the corps are Drs. George L. Schadt, Richard J. Rockford, and City Physician William J. Leonard.

SCARLET FEVER IN WINTHROP.—Some 20 cases of scarlet fever have been reported in Wintthrop, but none are looked upon as serious.

Miscellany.

COUNCIL OF NATIONAL DEFENSE.

GENERAL MEDICAL BOARD OF COUNCIL OF NATIONAL DEFENSE.

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 Frederic W. Washburn, Boston, Mass.
 Thomas W. Huntington, San Francisco, Cal.

REPORT OF THE MEDICAL SCHOOL COMMITTEE.

To the Medical Board,
 Council of National Defense:

Gentlemen: Your committee, after consultation with the Surgeons-General begs leave to submit the following report:

In your effort to solve the urgent problem before this Board and assist the Surgeons-General in supplying an adequate number of Medical Officers for the Army and Navy, it is important that this country should not repeat England's blunder at the outbreak of the war in permitting the disorganization of the medical schools either by calling the faculties into active service or sanctioning the enlistment of medical students into any of the line organizations. Ordinary foresight demands that we face the possibility that the war upon which we have entered may last for years. Medical schools to supply trained men for the future as well as the present emergency must be kept in active operation under any circumstances.

While aiding to the uttermost in overcoming the present shortage of men, the necessity of keeping the source of supply open emphasizes the importance of conserving our raw material. Therefore, men now in college looking forward to medicine as a career should be made to understand that it is their patriotic duty to the nation at this time to continue their studies and enroll in the medical school of their choice. Furthermore, no medical student who has not completed three years of medical work should be permitted to give up his course, as the country needs his trained and not his untrained service.

There are, however, ways in which the medical schools can help the present situation. The following suggestions are made for your consideration and action:

(1) Medical schools should be prepared to graduate senior medical students promptly in case of need. The faculties should urge all graduates who can be relieved of their obligations as internes in civil hospitals to enroll in the Medical Corps of the Army and Navy.

(2) Medical schools should be encouraged to consider as a form of service, the Italian plan by which Base Hospital Units can be organized through the Red Cross. These military hospitals carry with them the clinical faculty and students as medical personnel. This type of organization meets two ends—practical help can be rendered to the Army or the Navy in time of war, and instruction may be continued at the Base. This permits the graduation of men directly into the Junior grades of the Army after the most practical form of military instruction.

(3) Fourth-year students may be allowed to substitute, in special cases, service in a Base Hospital for the fourth year in the hospital at home when oppor-

tunities are offered for instruction in such military institutions.

(4) Medical Schools that do not adopt the Italian plan should be prepared to reduce the faculties to the minimum required for routine work and enroll all men so liberated in the Medical Officers Reserve Corps.

To put these recommendations into immediate effect, the Committee suggests that the Council of National Defense send the following telegrams at once:

To the Deans of All Medical Schools:

National safety demands that medical schools continue in full operation during the period of war. All medical students until the fourth year is reached should be discouraged from enlisting at present in any line of sanitary organization. Letter follows with particulars. Urge your cooperation in following suggestions contained therein to overcome present shortage of medical men. Please answer. Not for publication.

(Signed)

FRANKLIN MARTIN,
Council of National Defense.

To the Presidents of all Colleges and Universities:

National safety demands that all undergraduates planning to study medicine should enroll in the Medical School of their choice at earliest possible moment. Letter with particulars follows. Urge your cooperation. Please answer.

(Signed)

FRANKLIN MARTIN,
Council of National Defense.
 Respectfully submitted,

ARTHUR DEAN BEVAN,
 THOMAS W. HUNTINGTON,
 EDWARD MARTIN,
 CHARLES H. PECK,
 WINFORD SMITH,
 JOSEPH MARSHALL FLINT, *Chairman.*
Committee on Medical Schools.

REPORT OF THE HOSPITAL COMMITTEE.

The Hospital Committee met and considered the question of how and along what lines it might be of service, and after consultation with the Surgeon-General of the Army, begs to submit the following:

Inasmuch as it appears that at this time the matter of prime importance is the release of men from civil duties for service in the Medical Reserve Corps of the Army and Navy, it is recommended that the Hospital Committee be authorized to communicate with all general hospitals throughout the country having a capacity of 100 beds or over, urging the need of every available man for the Reserve Corps and requesting that the authorities of each hospital reorganize the Staff, to the end that as many men may be released as possible, and that a list be submitted to the committee specifying:

- 1st. The members of the Staff needed to carry on the work in the civil hospital.
- 2d. The members of the present Staff who can be spared.

This second group to be divided into:

- (a) Those now members of the Reserve Corps.
- (b) Those not members, but who are willing to become members of the Reserve Corps.
- (c) Those not members, who require persuasion.

As soon as this list becomes available, it is to be placed in the hands of the Surgeon-General. It is believed that such a list will be of value: First, as representing an organization which will safeguard the Civil Hospitals, which is of vital importance. Second, it will supply a list of available men, who are willing to enter the Reserve Corps. Third, it will supply a definite list of available men upon whom pressure should be brought to bear. It is believed that the

handling of the matter in this way will allay the fears with regard to the interests of Civil Hospitals, which now is a deterrent factor and release a large number of men who would otherwise not be available, or who would be slow to respond. Furthermore, it is understood that it would be of great assistance to the Surgeon-General's office.

The Committee would recommend that those men who are selected to remain at home as represented by approved lists, should be furnished with some emblem to signify that they are recognized as serving their country by performing the home duties.

The second matter considered and recommended herewith was that a selected list of hospitals be prepared, with reference to size, location near terminal facilities or strategic points, as, for example, the hospitals of the important points along the Atlantic and Pacific Coasts and the Northern and Southern Borders. Information should be obtained from these hospitals as to what facilities they would place at the disposal of the Government in case of need, the possibilities of expansion, amount of ground available for expansion, whether maintaining convalescent branches or not, and the ease with which water, heating and sewage connection could be made in the event of expansion. This list would supply to the Surgeon-General's office a list of approved hospitals available for convalescent military hospitals or for such other purpose as might be necessary.

The third point considered was the ultimate need of hospitals or facilities for handling special lines of medical and surgical work, such as neurological, orthopedic, urological, shell shock hospitals, etc. It is felt that by listing the special lines for which provision should be made and the hospitals equipped for such service, valuable information will thus be made available, and that the committee in performing this work may also serve as a buffer between the Surgeon-General and his Staff, and the large number of those who may have pet projects to propose.

Your Committee suggests that if it meet with your approval, authority be given to proceed with the work as outlined. The Committee is ready to extend its functions as occasion demands.

Respectfully submitted,

THOMAS W. HUNTINGTON,
ARTHUR D. BEVAN,
FREDERIC WASHBURN,
JOSEPH FLINT,
EDWARD MARTIN,
CHARLES H. PECK,
WINFORD SMITH, *Chairman*.

SOCIETY NOTICES.

THE AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION.—The twentieth annual meeting of the American Gastro-Enterological Association will be held at the Hotel Traymore, Atlantic City, N. J., April 30 and May 1, 1917. Physicians are cordially invited.

FRANKLIN W. WHITE, *Secretary*.

NATIONAL ASSOCIATION FOR STUDY AND PREVENTION OF TUBERCULOSIS.—The annual meeting of the National Association for the Study and Prevention of Tuberculosis will be held in Cincinnati, Ohio, from May 9th to 11th.

ESSEX NORTH DISTRICT MEDICAL SOCIETY.—Annual meeting of the Essex North District Medical Society will be held in Russell Hall, Y. M. C. A. building, 40 Lawrence Street, Lawrence (Tel. 1200) Wednesday, May 2, 1917.

Dinner will be served at 12.30 o'clock sharp. After the dinner the business meeting will occur at 1.45.

W. H. MERRILL, M.D., of Lawrence, a member of the Committee on Industrial Health Insurance, of the parent society, will make a brief report on the committee's work.

Papers will be presented as follows: F. H. Lahey,

M.D., of Boston, upon "The Surgical Treatment of Thyroid Diseases" (30 minutes); G. M. Atwood, M.D., of Haverhill, upon "Goitre as Seen by the General Practitioner" (15 minutes).

The discussion will be opened by D. Macdougall, M.D., of Haverhill. General discussion is desired. (All discussions 5 minutes.)

W. P. BOWERS, M.D., of Clinton, a member of the Advisory Board of the BOSTON MEDICAL AND SURGICAL JOURNAL, on the part of the Massachusetts Medical Society, will outline the policy of the JOURNAL and explain how Fellows may aid the State Society through its official organ (10 minutes).

Next meeting of the Censors will be held at Hotel Bartlett, Haverhill, Thursday, May 10, 1917, at 2 o'clock sharp (Tel. 8710). Candidates for admission to the society should bring their diplomas.

F. B. PIERCE, M.D., *President*,
J. FORREST BURNHAM, M.D., *Secretary*.

NEW ENGLAND PEDIATRIC SOCIETY.—The forty-ninth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, April 27, 1917, at 8.15 P.M.

The following papers will be read:

1. Treatment of Eczema.

Charles J. White, M.D., Boston.

2. Mechanisms of Defense and Serum Treatment of Poliomyelitis.

Harold L. Amoss, M.D., New York.

Discussion opened by Eugene R. Kelley, M.D., Boston, Francis W. Peabody, M.D., Boston, and Edwin H. Place, M.D., Boston.

Light refreshments will be served after the meeting.

MAYNARD LADD, M.D., *President*,
RICHARD M. SMITH, M.D., *Secretary*.

SUFFOLK DISTRICT MEDICAL SOCIETY. "CENSORS" EXAMINATION.—The Censors of Suffolk District will meet to examine candidates for admission to the Massachusetts Medical Society at the Boston Medical Library on Thursday, May 10, 1917, at 4 P.M. Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the secretary, and present evidence of their graduation from a recognized medical school, at least three days before the examination.

For further particulars apply, between 4 and 5 P.M., (except Saturdays and Sundays), to

DAVID CHEEVER, M.D., *Secretary*,
355 Marlborough Street, Boston.

HAMPDEN DISTRICT MEDICAL SOCIETY.—The annual meeting of the Society will be held at Hotel Worthy, Springfield, Mass., on Tuesday, April 24, at 4 P.M.

Regular business and election of officers for the ensuing year.

Papers for the afternoon:
"Remarks on Blood Pressure" Dr. G. D. Henderson
"The Cardio-Vascular System" Dr. E. A. Bates
Discussion by Fellows.

Dinner at 6 P.M. at expense of Society.
Censors meet for examination of candidates at Hotel Worthy on Thursday, May 14, 1917, at 4 P.M.

HERVEY L. SMITH, M.D., *Secretary and Treasurer*.

The nineteenth annual meeting of the American Proctologic Society will meet in Hotel Astor, New York City on June 4 and 5. The profession is invited to attend the sessions of the Society.

ALLENISTS AND NEUROLOGISTS.—The annual meeting of Allenists and Neurologists will be held Monday, July 9th, to Thursday, July 12th, 1917, in the Red Room, LaSalle Hotel, Chicago, under the auspices of the Chicago Medical Society. Dr. George A. Zeller will act as Chairman. The program will be mailed June 28th, with abstract of each paper. Contributors to the program are solicited. This is a society without a membership fee. Address, Secretary A. and N., room 1218, 30 N. Michigan Ave., Chicago.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

May 3, 1917

BOSTON SURGICAL SOCIETY		EDITORIALS	
REGULAR MEETING HELD MARCH 5, 1917.....	621	WAR OBLIGATIONS.....	644
CLINICAL OBSERVATIONS ON 331 CASES PRESENTING SYMPTOMS OF NEPHROLITHIASIS. <i>By E. F. O'Neil, M.D., Boston.</i>	623	A NEW PUBLICATION.....	644
INFECTION OF SIMPLE CLOSED FRACTURES. <i>By John Baptist Blake, M.D., Boston.</i>	628	THE MEDICAL SECRETARY AND LABORATORY ASSISTANT.....	645
SOME RECENT EXPERIENCES IN GASTRIC AND DUODENAL SURGERY. <i>By John T. Bottomley, M.D., Boston.</i>	629	TWO IMPORTANT LETTERS.....	646
GASTRO-JEJUNOSTOMY UNDER LOCAL ANESTHESIA IN THE TWO-STAGE OPERATION IN GASTRIC SURGERY. <i>By David Cheever, M.D., Boston.</i>	633	CENSORS' EXAMINATION.....	646
DEMONSTRATION OF BONE WIRING INSTRUMENTS. <i>By John Duff, Jr., M.D., Charlestown, Mass.</i>	636	MOBILIZATION OF THE MEDICAL PERSONNEL OF MASSACHUSETTS.....	646
ORIGINAL ARTICLES		MEDICAL NOTES.....	
A REPORT OF THE HARVARD INFANTILE PARALYSIS COMMISSION ON THE DIAGNOSIS AND TREATMENT OF ACUTE CASES OF THE DISEASE DURING 1916. <i>By Francis W. Peabody, M.D., Boston.</i>	637	HARVARD MEDICAL SCHOOL	
AN ESKIMO "DEFICIENCY DISEASE." <i>By John W. Little, Jr., M.D., St. Anthony, N. F.</i>	642	SUMMER INSTRUCTION TO THE THIRD YEAR CLASS.....	
BOOK REVIEWS		OBITUARY	
Military Surgery. <i>By Dunlap Pearce Penhallow, M.D.</i>	643	CHARLES F. DENNY, M.D.....	
Diseases of the Digestive Tract and their Treatment. <i>By A. Everett Austin, M.D.</i>	643	CORRESPONDENCE	
		REGISTRATION OF PHYSICIANS. <i>Walter P. Bowers.</i>	
		AMENDMENT TO THE WORKINGMEN'S COMPENSATION ACT. <i>Arthur N. Broughton.</i>	
		THE TREATMENT OF STAMMERING. <i>Ernest Tompkins.</i>	
		MISCELLANY	
		NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.....	

Boston Surgical Society.

Regular meeting held March 5, 1917.

DR. F. B. LUND read the first paper entitled "A Case of Bilateral Tumor of the Carotid Body."

(Abstract.)

Rarity of carotid tumors; a brief discussion of their nature; high mortality of operation in the reported cases; careful examination of about 80 cases reported shows that they are benign for many years, and that in the author's belief they often may be removed in their early stages without tying the carotid. Dangers of late involvement of the internal jugular vein, and pneumogastric and other nerves. Pathology of the tumors.

Report of a case operated on 29 years ago for removal of a carotid body on the left side, which was then of small size; tumor was successfully removed by Dr. George W. Gay, without tying the carotid; dissection leaves no doubt of the nature of the tumor; operation for a carotid tumor of the right side of the neck by the writer 29 years later; this required ligation of the common carotid and removal of a portion of the internal carotid. Uneventful recovery without complications. The writer has found no reports of other cases which have been successfully operated for bilateral intercarotid tumor.

DISCUSSION.

DR. SCUDDER: I was serving at the Massachusetts General Hospital as assistant to Dr. Arthur Cabot,

and one day he went home in a hurry, saying there was a gland in the neck of a patient which he wished I would take out. I proceeded to take it out, and found it was a tumor of the intercarotid body; it was very vascular. I tied the common carotid, the external and the internal carotid. The patient recovered from the operation. She was followed for three or four years, and was all right. (Showed specimen.)

I believe that there are two reasons for the radical removal of this tumor of the intercarotid body: first, it is very difficult, even when possible, to remove the tumor by dissecting it from the carotid vessels; and a second, and more important reason, the growth tends to recur. The tumor is a perithelioma and is malignant.

DR. LUND: I think it is essential to remove these tumors. Although they are benign at first, after they have been growing for years, they become malignant and invade the jugular vein, and are very hard to remove; they involve the pneumogastric nerve and paralyze the larynx. They seem to be a sort of poor relation of the sympathetic ganglia rather than a perithelioma; they do not contain epithelial cells. I think they are really derived from the sympathetic system. The reason for operating is that if left they become malignant and involve the pneumogastric nerve, jugular vein, etc.

DR. F. L. RICHARDSON (by invitation) read a paper entitled "Suggestions for the Dietetic Preparation and After-care of Operative Cases."

(Abstract.)

Post-operative nausea and vomiting, and later intestinal stasis with the collection of gas, cause the patient the most discomfort of any part of the surgical recovery. Many factors contribute

to the production of these symptoms. Among these factors are the improper dietetic preparation and use of cathartics.

Acidosis may be largely reduced and often prevented if the diet before operation is high in carbohydrates, moderate in proteids and low in fats. This also tends to conserve the strength of the patient. Cathartics should be rarely used. When absolutely necessary, a saline should not be used later than 36 hours before the time set for operation, relying on enemata to clean out the colon. Vigorous catharsis and an empty small intestine contribute to post-operative intestinal stasis with the collection of gas so painful to the patient.

Earlier feeding of the patient is recommended, and at first should be largely carbohydrates. This food stimulates early peristalsis, and with it the expulsion of gas. It also conserves the strength of the patient. Where food cannot be given by mouth, glucose should be given by rectum.

DISCUSSION.

DR. FREEMAN ALLEN: I agree in the main with everything that Dr. Richardson has said in his excellent paper, but I have to deal occasionally with alcoholics and athletes, and I think it is a great mistake to feed such patients too much. I think that they should be starved and thoroughly purged because of difficulty in controlling them with the anesthesia. In order to do so, I firmly believe that they should be on a diet for two or three days if possible before the operation. On the other hand, weak patients should be carefully stimulated and fed up to the very last minute. Spinal anesthesia has the advantage that you can feed patients before, during, and after the operation, if necessary, and it also leaves the intestines collapsed, whether there is much food in them or not. The responsibility of dieting patients is divided. I am constantly working for dental surgeons, and I find that no one assumes the responsibility of dieting their patients. Bad hearts ought not to be fed up to the last minute, and should not come to the operation with full stomachs.

I think Dr. Richardson's paper marks an advance in getting the anesthetist to go more into the question of diet.

DR. JONES: For the past year and one-half I have followed Dr. Richardson's ideas fairly completely in regard to pre- and post-operative treatment. All patients have been urged to drink an extra quantity of water the day before operation, and have been given food much later than formerly. They have been given only the cathartic they have been in the habit of taking, and the morning of the operation they have had an enema. They have been fed as soon as possible after operation, usually with gruel instead of broth. Water has been given freely after a few hours. I am sure patients are much more comfortable than when given castor oil and starved for a longer period.

To lessen the amount of ether required, I have used Crile's anoci-association method in part, that is, novocain and quinine and urea in the abdominal wound, and gentleness in handling tissue. I feel that this reduces the amount of ether used to a

minimum, and the time required is no greater than with simple ether anesthesia. In addition, a much better relaxation of the abdominal wall is obtained.

Carbohydrates before operation, avoidance of strong cathartics, a minimum amount of ether, care in handling tissue, a sufficient amount of water by mouth or by rectum, with early feeding, especially of carbohydrates, has done much to lessen the discomfort of operation.

DR. PORTER: I am very much in agreement with almost all that Dr. Richardson has said. With regard to the after-care of laparotomy, I should not give warm, but very hot water. This should be given with a wooden spoon, as hot as the patient can swallow it. I often give hot, sweetened tea without milk—never cracked ice. It increases thirst and often causes nausea, and does more to undermine the morale of patients suffering the first few hours after an abdominal operation than anything that I know. While castor oil is probably the most common cathartic given previous to operation, I am sure that we have many times caused sleepless early mornings before operation by this drug. If used at all, it should be given the night before the night before operation. I have not been able to convince myself entirely of the value of the anoci-association theory, but I am sure that novocain injected subperitoneally relaxes the abdominal wall. I am not sure that it affects, in any way, subsequent gas pains or distention. The injection should be made some distance back from the incision, and at least five minutes allowed for full action of the drug.

DR. PACKARD: Mr. President,—May I beg to call your attention to one slight omission which seems to me important, namely, the idiosyncrasy of the patient. Experience leads me to believe that preparation for anesthesia should be adapted to each individual case. For example, the matter of clearing the intestinal tract through the use of a cathartic. It is common experience that a medicament, such as castor oil, may provoke a gentle, free, painless movement with one patient and a most weakening profuse flux with another. It is, therefore, my custom in ordering such preparation to inquire the patient's own personal experience. This I have usually found a very reliable guide, and whatever it be, whether cascara, castor oil, a saline cathartic, or "my favorite pill"—that is the one I direct the patient to take at least 24 hours before the hour fixed for the operation. Personally, I would rather that no cathartic be given than that the night's sleep before the operation should be broken by copious and repeated bowel movements.

My watchword in general anesthesia is *reduction of the general anesthetic to the lowest possible quantity*. This includes two important points: *First*. Do not begin anesthesia until everything relating to the operation is ready. *Second*. Make the technical part of the operation as short as possible. Gas and ether anesthesia is an immense step in advance. It enables the anesthetist to carry the patient to complete surgical anesthesia in 90 seconds. The patient is often carried through an operation of considerable length on gas supplemented with a very moderate amount of ether vapor.

Under such anesthesia the after-effects are conspicuous by their absence. The long-continued

post-ether gastric disturbances of the early days of anesthesia are now almost unknown. The patient awakens from the anesthetic usually before removal from the operative table. In some cases a slight regurgitative effort or two of the stomach is all there is of vomiting. Patients are encouraged to take all the water they crave from the beginning, and are not urged to take nutriment until they want it. In case much blood has been lost or of prolonged aversion to water and food, the rectal drip is instituted.

DR. F. H. LAHEY (by invitation): Inquired regarding acidosis following operations for goitres. He had found that patients vomit after local anesthesia, and although they are fed before and after operations, acidosis is still a post-operative complication, as with ether.

DR. COTTON: I would like to ask Dr. Richardson how far he can associate the minimal amount of gas or the freedom from gas and stasis, with the fluids given. Since I have been using large amounts of fluid right away after ether, it seems to me that I have ceased to have the stasis that I used to have. I know it affects the vomiting. I would like to know how much difference he has found in the matter of stasis where large amounts of fluids are used.

DR. RICHARDSON (closing): In answer to Dr. Codman's question as to whether there was considered to be any standard of good anesthesia as far as vomiting goes—whether 50% or 25% was considered a reasonable number:

The amount depends on so many different factors that I don't think it is really right to judge the anesthetist by the number of his cases that vomit; although I can make any of my patients vomit. You have to divide your operations into abdominal and non-abdominal. In abdominal—but depending upon the surgeon—I should think 50% vomit, or know that they vomit.

In answer to Dr. Cotton's question: The question of water in relation to stasis I have never considered. It hadn't occurred to me that giving water was one of the factors that contributed to early peristalsis.

In answer to Dr. Rushmore's question, "Is there anything that can be done towards protecting the invalid from the effects on lipoids, and why are fats so objectionable in the diet?" That is the whole question, I think. We don't know very much of the true action of ether and other anesthetics or how they get in their effects. It may be a solvent effect on the lipid bodies. The addition of carbohydrates more completely burned up the fats when they were liberated, and sometimes it is necessary to add sodium bicarbonate, or some other alkali.

I expected someone would ask what business it was of the anesthetist to go into the preparation of the patients. That is really the surgeon's job. But when we have a large amount of vomiting or the patient gets acidosis, the surgeon always looks at the anesthesia as being the possible cause of this, whereas the anesthesia is only one factor, and may not be the chief factor at that.

CLINICAL OBSERVATIONS ON 331 CASES PRESENTING SYMPTOMS OF NEPHROLITHIASIS.

By R. F. O'NEIL, M.D., BOSTON.

THE large number of patients presenting symptoms of lithiasis, seen by the G. U. Department in connection with other departments, led me to look over the records of a considerable number of patients in which the provisional diagnosis was nephrolithiasis.

The symptom-complex of pain located in the back, abdomen or loin, whether referred to other organs or not, and with or without urinary symptoms, is of interest alike to the general surgeon, the orthopedic and the genito-urinary surgeons, and many borderline cases may need the assistance of all three to arrive at a correct diagnosis.

In all 331 cases were looked over, divided as follows:

House cases positive for stone	105
House cases negative for stone	28
	133
Out-Patient Department cases	
negative	98
doubtful	13
positive	25
no classification	3
insufficient data	50
	331

Fifty-nine of these were disregarded because of insufficient data, leaving 273 cases. Of these, 133 were House cases and 139 O. P. D. Of the House cases 30 were admitted to the ward directly, leaving 102 from the O. P. D., or a total of 241 cases studied in that department. These records are quite complete and include x-ray findings, urine and general examination.

From 40 to 45 per cent. of these cases were lithiasis on the evidence found. I think, however, it is fair to assume that the proportion would be greater if further study were possible.

To take this series a little more in detail: of the 105 positive cases in the House, 5 passed a calculus while waiting. Of the remaining 100, 77 were males and 23 females; the greater number of stones occurred during the decades from 20 to 40.

Eighty-seven patients were in the G.-U. service. Of this number, 51 were renal, 23 ureteral and 13 bilateral. Six refused operation. On the remaining 81 patients 93 operations were performed; this includes the bilateral cases and some cases where litholapaxy, or operation for stricture of the urethra, or both ureterotomy and pyelotomy were performed on the same patient.

The operations were as follows:

Pyelotomy	42
Ureterotomy	10

Nephrectomy (primary)	16
Nephrectomy (secondary)	2
Nephrotomy	9
Suprapubic operation with ureterotomy	3
Vaginal Ureterotomy	1
Litholapaxy	4
Intravesical operation	6
Stone passed	3
Stone not passed	1
Removed by ureterotomy later	2

Results recorded:

Recoveries	
Renal	49
Ureteral	22
Bilateral	8
Refused operation	6
Bilateral	5
Ureteral	1

Deaths

- 1 Pyelotomy from pneumonia (bad anesthesia)
- 1 Gas-oxygen poisoning (patient died before kidney was tied off)

Of the 13 cases on the Surgical Service, 9 were renal, 2 ureteral and 1 bilateral. 17 operations were performed on these 13 patients.

Pyelotomy	6
Ureterotomy	3
Nephrectomy (primary)	2
Nephrectomy (secondary) for bleeding	1
Nephrotomy	4
Vesical Calculus	1
There were no deaths.	

The diagnosis on all of these 100 cases was made on symptomatology, x-ray and cystoscopic findings and urine examination. A positive x-ray was obtained in 94 of these cases; no record in 3; negative in 3; one showed a scratch mark on wax tipped catheter. There is some question as to the other two; the stone was either passed or not found. On several occasions the x-ray was at first negative, later positive. The urine examination in 74 renal cases was positive; negative in one case only, that where nephrotomy was done for a calculus in one of the calices. In another case the urine was negative at one examination. No record in three cases. In 26 ureteral cases the urine was negative in 4. Negative at time of operation, history of blood, 1; negative twice out of six examinations 1; no record, 3.

Eight of these patients had been subjected to previous surgical operations:

- Three for appendix
- One, appendix with exploration of left ureter.
- One, appendix and, later, operation on kidney which was found "twisted on ureter."
- One, nephropexy on a kidney full of stones.
- One: first, operation D. and C.; second, right ovary removed; third, double oöphorectomy. X-ray showed 5 stones in right kidney.
- One, cholecystectomy and appendectomy. X-ray showed stones in right ureter.
- One treated two years for malaria; a bilateral case.

- One diagnosed as pyelitis of pregnancy; a large calculus requiring nephrectomy.
- One with intermittent hematuria for years; treated for Bright's disease with restricted diet; a large calculus required nephrectomy.

The symptomatology is of interest. Practically all cases had pain or a history of pain, beginning in the back or loin, groin or abdomen, sometimes referred to various regions; described as a dull ache, grumbling, acute and knife or colicky-like, in fact, all shades and variations, and impossible to classify. Often described as a "sudden sharp pain in back and side." In 62 cases nausea and vomiting were present in 19. Urinary symptoms were often present but by no means constant; generally described as a "burning" or "scalding," or at other times "difficulty in passing water," and often frequency. In some cases hematuria was the presenting symptom.

The physical examination also varied to a marked extent. At times c. v. a. tenderness was present, spasm of back muscles or of abdomen, tenderness over appendix, kidney, gall-bladder or urinary bladder; again no definite picture.

The typical text-book picture of severe colicky pain beginning in back and radiating to testicle, with renal tenderness, was present but not common by any means. Of course, stones in the ureter gave a much more definite picture than those in the kidney.

A very interesting and instructive group of cases were the 28 referred to the House as nephrolithiasis which proved to have other lesions. They were as follows:

1. Hydronephrosis with kinked ureter; previous operation for appendix. X-ray shadow proved to be calcified gland.
2. Left hydronephrosis.
3. Movable kidney. Urine negative.
4. Stricture of ureter. X-ray negative; phlebolith.
5. Kinked ureter. Previous operation for appendix.
6. Movable kidney.
7. Bilateral pyelitis.
8. Case sent in with positive urine and shadow shown by x-ray. Stone not found at operation, but the x-ray, which before had been typical, was negative afterwards. I feel sure that the stone was lost and probably came out with the blood-clot at operation. Therefore, this case does not strictly belong in this group, as the diagnosis, renal calculus, was in all probability correct.
9. Appendix.
10. Acute abdominal constipation relieved by enema.
11. Pyelitis.
12. No demonstrable lesion.
13. Gall-stones. X-ray showed gall-stones or renal calculus.
14. Chronic lead poisoning.
- 15-18. Four cases of cholelithiasis.
19. Arteriosclerosis.
20. Abdominal glands.

(Four cases with typical symptoms and positive urine.)

21. Vesical calculus.
22. Nephritis. Faulty position. Hypertrophic arthritis.
23. Appendix. Kidney explored. Urine and X-ray negative.
- 24-26. No evidence of stone.
27. No symptoms while in House. No stone found. Examinations all negative.
28. Four years previously nephrotomy for stone and an appendix operation before that. Nephrotomy for stone, not found. Secondary nephrectomy for bleeding. Death.

These cases all had negative x-rays except as herein stated. Some positive urine examinations. All more or less typical symptoms. Their diagnosis will be discussed later.

The O. P. D. cases were classified as follows:

Negative	98
Orthopedic	32
(With 4 more doubtful)	
Various surgical and medical lesions	11
Syphilis	2
Gall-bladder	1
Chronic appendix	2
Hernia	1
Lane's kink	1
Constipation	4
nonstrable lesion	17
logical conditions	4
Genito-urinary lesions	3
Genito-urinary tract	4
Lower tract	27
Upper tract	3
Renal tuberculosis	2
Stricture of ureter	2
Stricture of kidney	5
Movable kidney	1
Abnormality of renal pelvis	1
Abnormality of renal pelvis	5
Colon bacillus pyelitis	1
Nephritis	2
Albuminuria	1
Cystitis	1
Carcinoma of prostate	1
Carcinoma of prostate	1
Urinary symptoms	6
Urinary symptoms	4
Doubtful	4
Orthopedic	4
Gall-bladder	4
Appendix	1
Hernia	1
Doubtful because of lack of urine examination or positive urine negative x-rays	13
Positive Findings	18
To other institutions, or farther home	7
Probably positive	3
Unclassified	139
Disregarded because of lack of data	59
	98

Leaving out the orthopedic and doubtful cases for a moment we find 53 negative cases, other lesions of the genito-urinary tract being more common: 31 cases of various surgical lesions and a class put under the heading "no demonstrable lesions." These are cases which give a more or less typical history of pain which is perfectly compatible with renal calculus, but all examinations

of urine and x-ray are negative; often repeatedly so. The 13 doubtful cases were so called because of lack of urine examination or the presence of a trace of albumin. The symptoms were more or less typical and in every case the x-ray was negative, but they could not be definitely excluded; 4 were orthopedic, thought to be gall-bladder, 4 appendix and 1 hernia.

The preliminary diagnosis in the remaining groups of cases were undoubtedly suggested by the character and location of the pain and was later ruled out by the x-ray, urine and general examinations.

We see a considerable number of patients with the orthopedic department and the relation of orthopedic conditions to the diagnosis of urinary lesions is one of great interest. In this series there are 36 cases. I have divided them into two groups; those with urinary symptoms (24) and those without (12). The ones with urinary symptoms have been further divided into those with a normal urine (15) and those with an abnormal urine (9).

In the 12 cases without urinary symptoms the x-ray examinations are all negative for calculus. Urine negative 6 times; not given 6 times.

The orthopedic diagnosis is:

Postural strain	7
Flat-foot, with abnormal 12th vertebra	1
Hypertrophic arthritis of spine	1
Scoliosis; abnormal 4th and 5th lumbar ..	1
Potitis	1
Orthopedic (Obesity with back strain) ..	1

The symptoms are not incompatible with some renal lesions. In cases of postural strain the pain is described as

Attacks of pain in right side, radiating to back and right leg.
Pain in centre of back.
Right side and back.
Right side and groin.
Left abdomen.
Right lumbar region.

The other lesions gave a similar history. A case of ptosis giving a history of attacks of knife-like pain for two years.

Of the 15 cases with urinary symptoms and negative urine, the urinary symptoms are slight and are described as a slight burning or scalding or a moderate frequency. The x-ray was negative for calculus in 14 cases; not given in 1. The orthopedic diagnosis was postural strain in 9 of these. The symptoms are described as,

Right-sided pain typical of renal colic.
Pain in hypocondrium and lumbar region.
Three days severe pain in right renal region.
Pain in left c. v. a.
Right back, side and suprapubic region.
Three attacks of left c. v. a. pain with nausea.
Pain about umbilicus up to right side.

Six other cases in the group with similar symptoms; orthopedic diagnosis:

Hypertrophic arthritis	1
Abnormality of 4th and 5th lumbar	3
Orthopedic	1
Backstrain (pronated feet)	1

There were 9 cases presenting an abnormal urine. In 5 of these the only abnormality was a s. p. t. of albumin; x-rays all negative. The orthopedic diagnosis being

Hypertrophic arthritis	1
Dull pain in left upper quadrant; some tenderness.	
Postural back strain	2
Pain in right c. v. a.	
Sacro-lized transverse process 5th lumbar ..	1
Pain in left hypochondrium.	
Sacro-iliac strain	1
Pain across back, limitation of motion, marked deformity of 5th lumbar.	

In 4 cases the urine showed marked abnormality and in spite of negative x-ray and a definite orthopedic diagnosis, it did not seem as if calculus could be excluded. They were as follows:

Faulty posture.	
Hematuria one year ago. Since then 2 or 3 similar attacks. Pain in low lumbar region. Cystoscopy showed trigone reddened; dilated vessels; clear urine from kidney. Bleeding may have come from bladder.	
Abnormality of 4th and 5th lumbar.	
Pain in right c. v. a., severe three days ago. Nausea and vomiting. Urinary frequency with hazy urine; albumin s.p.t.	
Postural back strain.	
Sudden pain. Urine bloody until 10 days ago.	
Extensive hypertrophic arthritis (3d and 4th). Sudden ache in region of kidney. Urine smoky. Sediment shows blood and pus.	

In this group the pain was described as radiating in 8 cases and associated with nausea and vomiting in 6. In many of the cases the pain and symptoms were very suggestive of urinary lesions.

The study of this series of cases so briefly presented brings out several points in the differential diagnosis of nephrolithiasis: First, as regards the value of the symptom of pain. It will be noticed from the character of the pain described and the number of conditions found, that there is no definite type and that the pain of lithiasis can be simulated by, or simulate, a great variety of intra-abdominal and other lesions, which is well illustrated by the series of 28 cases admitted to the House with typical symptoms of lithiasis definitely proved to have other lesions.

Pain, or the history of pain, was present at some time in practically all cases of calculus. That it may be remote is shown by the absence of pain for a long time as in the cases of large so-called silent calculi which remain symptomless for years, only to be discovered in a routine examination. Of course, in a certain number of cases the character and location of the pain will be typical of the lesion, whether it be gall-bladder, appendix, calculus or back strain, and if the patient is seen in the acute attack the diagnosis may be pretty accurately made. The history of such attacks is, however, quite a different proposition. Pain as a symptom must be regarded as unreliable, although often suggestive.

URINARY EXAMINATION.

While it was true that a few cases of ureteral calculus present a persistently normal urine, these are rare, only a few (4) being found in this series. Repeated examinations of the urine should be made in the negative cases for microscopic blood and albumin, and when found these should be given due consideration. For example, see some of the cases cited where unnecessary operations have been performed on an unoffending organ. In the female a catheter specimen should always be obtained and in the male the lower genito-urinary tract eliminated.

X-RAY.

This is without question the most valuable single method of diagnosis we have. Failure of the x-ray to show calculi has been estimated to occur in from 6 to 15 per cent. of the cases. This, I believe to be greatly in excess of the facts. With a good technic, good preparation and multiple exposures, a few stones will escape. Dr. Brown tells me that he puts it at 96 per cent. positive. In cases of negative x-ray and persistence of symptoms, the wax-tipped ureter catheter is of value. The main stumbling-blocks are extra-renal or ureteric shadows, as gall-stones, calcified tip of transverse process of the vertebrae or calcified glands, especially when adherent to the ureter. The employment of the x-ray catheter, the injected radiograph and stereoscopic plates, will serve to eliminate these.

Physical examination is, of course, of great importance, and particularly so in all cases where there is any question of an orthopedic condition, but may be misleading, particularly in palpation of the kidney, the palpable and tender organ not infrequently proving to be the healthy one. It should not be relied upon without employing some of the foregoing measures.

In cases of obscure abdominal pain, any or all of these measures may be necessary for an accurate diagnosis of lithiasis. It may be stated that a persistently normal urine and a negative x-ray must be a great rarity if it ever occurs in cases of lithiasis.

DISCUSSION.

DR. BRACKETT: With the point mentioned by Dr. O'Neil, I should certainly agree in the differentiation of pain of spinal or of renal origin, that it should be considered from its location and the condition under which it is occasioned. One must start with the definite premise that pain has no manifestation either in its character or its mode of occurrence which is characteristic of spinal origin, although it may suggest it. There are certain manifestations of pain which are distinctly suggestive of having spinal origin, and these may be eliminated in their differential diagnosis, leaving the others for consideration. Pure spinal pain can be expected to be distributed along the course of the nerves which are irritated in their nerve roots by the lesion, and of the distinction that they are provoked by motion or by violence of the spinal col-

umn, and accompanied by the physical signs of spinal guarding, such as rigid attitude, limited motion, muscular spasm, etc. There are three lesions or conditions under which these spinal lesions can be grouped. First, that of some actual lesion of the spinal column, destructive, such as tuberculosis; or non-destructive lesions, such as osteoarthritis, or those distributed anatomical relations such as are commonly found in the sacro-iliac or lumbosacral region. In these we expect to find distinctly referred pain, limited and guarded motion, muscular spasm, etc., and as a rule, this type should not be confounded with pain of renal origin, for the examination of the essential conditions should give evidence of the presence of the lesion.

The second type are those in which are found various relaxed positions, giving mal-posture of strain in which the pain is much less definite, and much less likely to be referred, not provoked by motion, but increased by conditions which add to the posture strain, and distinctly improved by positions which relieve strain, as, for instance, in recumbency. Examination of the back shows a mobile, instead of a stiff spine, and absence of mal-posture.

This leaves the third type, in which the diagnosis may be more confused, namely, either in the relaxed back, in which the posture is one of mal-position, with added strain, or, the relaxed sacro-iliac or lumbosacral joints, in which the strain is also added.

In the simpler cases, the pain is influenced or even controlled, by position, and is relieved by recumbency, but in these latter, the pain may be referred, is frequently not relieved by recumbency, and has the added element of spinal sensitiveness of greater or less degree of rigidity of spasm. The lack of characteristic pain in many cases, and the very close resemblance of the etiological symptoms in these two classes of cases, will make frequently necessary a diagnosis by elimination.

DR. OSGOOD: There are two interesting conditions associated with pain suggesting kidney lesions. One of these is the frequent finding of vertebral abnormalities which can be classed under the heading of numerical variations. In looking over all the x-ray plates of the spine taken of all sorts of conditions at the Massachusetts General Hospital for a period of a month, we found that fully 50% of these plates showed some abnormality of the last lumbar or upper sacral vertebrae. These departures from the normal consisted in very much enlarged and impinging transverse processes, unilateral or bilateral sacralized last lumbar transverse processes, or a lumbarized upper sacral vertebra. Many of these plates had been taken for suspected kidney lesions.

The second condition which suggests strongly a kidney lesion, but which is often proved to be relieved by purely postural treatment, is the symptom of frequency of micturition. We have seen a very considerable number of cases in which this symptom was present, and a genito-urinary examination has been entirely negative. The symptom was relieved by correcting the faulty posture, or supporting a marked visceral ptosis.

I do not know the exact nerve mechanism which would account for this relief.

DR. PAINTER: Two very distinct cases come to my mind in connection with possible causes for backache, the diagnosis of which is confusing. One

was that of retroperitoneal glandular disease, which very commonly gives rise to localized pain in the lumbar and low dorsal region. The radiographs in these cases have once or twice revealed a calcified mass so close to the region of the kidney that it was absolutely impossible to determine whether the calcification was in the kidney or outside of it. The absence of any kidney symptoms and the ability to palpate glands, or at any rate, resistance in the retroperitoneal region, have supported the theory that the trouble was glandular enlargement, rather than any disease of the kidney.

Another striking case was that of a man who had been wearing a plaster jacket for some time for the relief of what appeared to be an osteo-arthritis of the spine. Pain was definitely localized in the lower back radiating out along the intercostals into the region of the hypogastrium; pain had not been relieved by the application of the plaster jacket, a condition which should have aroused suspicion were the trouble an osteoarthritis. One day he suddenly collapsed while wearing the plaster jacket and while he was up and about the ward. He became very pallid and was in much shock. Immediate removal of the jacket revealed a pulsating tumor in the epigastrium, which proved subsequently to be a ruptured aneurysm of the coeliac axis. The essential symptoms in this case had been pain in the lower back and rigidity of the spine and sufficient clinical symptoms of an osteoarthritic lesion in the vertebral column to justify such a diagnosis.

DR. A. L. CHUTE: I have not gone over my cases of stone in the kidney and ureter with the care that Dr. O'Neil has, and my remarks may be said to be impressions, gained from the observation and treatment of a considerable number of cases. Cases of stone fall into two classes, the chronic and the acute. The subjective symptoms in the chronic cases have but little significance; so much so that the patient who presents himself with the pain which is so often supposed to indicate stone—that is, pain in his loin or back, running down anteriorly or into the thigh—is quite as likely to have an orthopedic lesion as a renal stone. If this pain is attended with some frequency of urination, it increases the probability of stone; though all those symptoms, with even the addition of a little blood in the urine may be seen in other conditions than stone in the kidney or ureter. All may come from a sub-acute inflammation of the kidney pelvis, a hydro-nephrosis or a stricture of the ureter. A good, sharp attack of general abdominal pain, attended with vomiting and distention, is the symptom commonly seen in the acute cases; later there may be tenderness, resistance, or even a mass in the loin; that this picture is not distinctive of renal stone is borne out by the number of instances in which surgeons, by no means careless or incompetent, have operated cases which they supposed were appendicitis, gall-stones, intestinal obstruction or other lesions, only to find that the real cause was a renal stone.

I have recently removed a large stone from one pelvis of a double-pelvis kidney. In this instance, the patient was supposed for years to have been suffering from occasional attacks of ptomaine poisoning or acute indigestion. In another case, operated upon lately, the history was vague and the only symptom that we found was anuria. This proved to be the so-called reflex anuria which I had always supposed did not exist. The referred testicular pain appears in only part of the male cases. It is not

pathognomonic. The symptoms, then, in cases of renal stone, may not show anything distinctive; and I think one may say that this applies to the examination of the patient as well. The palpation of the loin may show nothing characteristic; the exploring bougie, passed up the ureter, may lift a stone so gently that one does not recognize any resistance. There are rare cases of stone in the ureter in women, where examination is definite; in these cases the stone is so low in the ureter that it may be felt by vagina. Such a case came under my notice last week. The most accurate evidence in these stone cases is that furnished by careful radiography. I can think of but one instance recently in which a good radiograph has not shown a renal stone. In order to draw any negative conclusions as regards the presence of calculi, I feel that one must have radiographs in which not only the transverse processes of the vertebrae show, but in which the outline of the kidney is evident as well. The whole urinary tract should be shown always, for even in the instances where pain is in the loin, the stone may be in the lower part of the ureter. The shadows of phleboliths, calcified glands and the tips of transverse processes may at times cause some confusion, but they may be easily recognized by use of the radiographic ureter catheter, the stereoscopic plate and the thorium injection.

I believe that, though the symptoms of stone in the ureter or kidney are very often vague, the diagnosis can usually be made with accuracy by the help of painstaking radiography.

INFECTION OF SIMPLE CLOSED FRACTURES.

BY JOHN BAPST BLAKE, M.D., BOSTON.

THE subject of fractures, their treatment and sequelae, has been very prominent in the surgical world during the past five years. Much has been added to our practical working knowledge of this most important condition. The amount of literature on the subject is very large indeed. Under these circumstances, it is desirable that even rare and unusual complications of fractures should be recorded and described; hence this brief communication.

The writer has seen, in the course of the past twenty years at the Boston City Hospital, ten or twelve cases of infection of simple closed fractures; by this is meant an infection which parallels both in intensity and duration, the infection which is still too common in compound or open fractures. The number of fractures treated yearly at the Boston City Hospital is very great; perhaps as great as the number treated in any hospital in the world. The cases come largely from the working classes, and are unselected. Conditions tending towards sepsis are, therefore, common. Three cases may be cited as examples:

CASE 1. An elderly man, thin and rather feeble, was crushed in an elevator accident; his right humerus was broken and much comminuted; his right

arm contused and scratched; he did not have other injuries. On the day after admission his temperature began to rise; on the third day he had obvious signs of an infection of the arm, which was opened on the fourth day; there was a large amount of pus; he died on the sixth day.

CASE 2. A laboring man, fifty years old, received a fracture of both bones of the leg from a cave-in of a bank of earth. There were no scratches on the leg, but large blisters formed immediately. In spite of careful cleansing, signs of pus formation became evident and on the fifth day required incision and drainage. Pus, as in the other case, invading not only the muscles but also the ends of the broken bones. After a long, tedious convalescence, the man recovered with an unexpectedly good result, though there was some over-lapping of the fragments and stiffness in the ankle joint.

CASE 3. A fracture of the os calcis produced by a fall in which patient landed squarely on his feet; no discoloration or scratches were seen on the skin, but the development of pus on the outer surface of the os calcis required incision and drainage; good recovery.

The other cases were, generally speaking, similar to the first two of these here reported. Unfortunately, it has not been possible to trace the records, but one or more examples of this condition have been observed by Drs. George H. Monks and Frederic J. Cotton. So far as I know, the condition has not been described in print.

The etiological factor in this condition is the entrance of bacteria through the skin, either by a scratch, or a hair follicle, or by the gateway of blebs and blisters; rarely through the circulating blood, in a manner similar to that which probably takes place in cases of acute osteomyelitis of the tibia in a boy, after slight trauma. The fact that the general resistance of these patients is often diminished by hard work, age, alcohol and other bad habits, and that the skin over the site of fracture is often very dirty, and that the bacteria upon the skin happens to be exceptionally active, combine to produce the conditions essential to infection. In many instances, the tearing and crushing of muscle tissue is an additional factor, increased at times by rough handling in transportation; altogether, this produces an ideal culture medium for any bacteria which may enter through the skin or through the blood stream.

The treatment is primarily preventative; it means more than usual care in cleansing the skin, and in the treatment of blebs and blisters; the latter may at times contraindicate the immediate correction of fractures. When suppuration is evident, incision and drainage and the usual routine of the septic compound fracture treatment is obviously to be followed; at present, presumably by Carrel's method.

CONCLUSIONS.

1. Infection complicating closed (simple) fractures is an infrequent, but serious complication.

2. The infection may be blood-borne; or it may enter through abrasions, minute scratches or blisters; occasionally through a hair follicle.

3. It is most apt to occur in the presence of severe trauma, and in cases in which the skin is unusually dirty, and the general resistance of the patient unusually low.

4. Preventive treatment consists in a very thorough cleansing of the skin, and an aseptic treatment of superficial scratches and of blebs. Once infection is established, thorough drainage and the Carrel method are indicated.

5. Prognosis is usually good, though duration is usually long.

DISCUSSION.

DR. COTTON: I remember a case of Dr. Monks' also a case with severe gas-bacillus sepsis. There was a little scrape of the skin on the anterior surface of the thigh, but it was not a compound fracture. He finally got well. I have seen two or three other cases.

DR. W. J. MIXTER: I am reminded by Dr. Blake's paper of a case of fracture of the skull at the Massachusetts General Hospital; a child with a simple fracture of the skull who died of meningitis with a pure culture of influenza bacillus. The child fell from a chair two weeks before entrance to the hospital. Diagnosis of meningitis made by lumbar puncture. A medico-legal autopsy was done by Dr. McGrath. There was no fracture of the base, whatever, but pus from the line of fracture at the vertex also showed influenza bacilli.

DR. SCUDDER: I recall one case that was so striking it is worth while mentioning it in connection with Dr. Blake's paper. The case was that of a woman, a young adult, who received a T-fracture into the knee joint, a T-fracture of the lower end of the femur. The patient was an apparently healthy woman. It was decided to do an open reduction of the fracture. Upon making an incision to reach the fragments, pus and blood were evacuated from the swollen tissues about the joint and from the joint itself. Of course, under these conditions no plastic operation was done upon the bone. The wound was drained and the whole leg was properly immobilized. The patient did poorly, continued to be septic, showed evidences of pyemia, and an amputation of the thigh was done. The patient subsequently died.

Here was a case with no apparent abrasion of the skin, and there was no evidence of infection previous to the receipt of the injury. The infection must have been through the blood stream. Dr. Blake has very properly, it seems to me, called attention to this possible serious complication associated with apparently simple closed fractures. The subject is one of great importance, and I record this case as a recent personal experience.

DR. BLAKE (closing): Three cases have been described by Drs. Lund, Cotton and Mixter. Two of these were found to be infected at the time of late operation (boneplating), or at autopsy; there were no gross signs of infection before this time. It is possible, therefore, that some cases of delayed union are complicated by what might be called a "silent" infection.

The writer has seen one case of closed fracture of the humerus, in which the skin of the entire arm became much inflamed; the arm looked like a raw ham, but deep infection did not occur. After two weeks, and while still in the ward, the man developed a bronchopneumonia and died in thirty hours. This pneumonia was probably of septic origin, superficial sepsis of the arm being the starting-point.

SOME RECENT EXPERIENCES IN GASTRIC AND DUODENAL SURGERY.

BY JOHN T. BOTTOMLEY, M.D., BOSTON.

THE fact that a relatively large and, for me, an unusual number of cases of gastric and duodenal surgery happened to come under my observation in January of this year, and that some of them, either in clinical history or in operative result, were not without interest, has led me to offer a brief report before this society and to hope that it will draw out an expression of opinion from the members on certain questions in this particular field that are still to be regarded as unsettled.

These brief remarks have to do with a total of fifteen cases, eight of which showed chronic ulcer of the duodenum; one, chronic ulcer of the duodenum with a subacute perforation; three, chronic ulcer of the stomach (two of which were "hour-glass" stomachs); one, co-existent gastric and duodenal ulcers, and two, cancer of the stomach. In the treatment of these conditions gastroenterostomy with infolding* of the ulcer was done eight times, gastroenterostomy with suture of perforation once, gastroenterostomy alone, once, "sleeve" resection of stomach and pyloric portion of the stomach, once, and exploratory abdominal section, once.

There were two deaths, and to these particular attention is asked because they followed the less radical and less grave surgical procedure and were due to causes which to me, at least, were very unusual in this field.

The first fatality occurred in a case of chronic ulcer of the duodenum for which posterior gastroenterostomy with infolding of the ulcer had been done.

The patient, a thin, worked-out, neurotic woman, thirty-eight years old, had been bothered for three years with persistent, so-called "dyspepsia." Her clinical history was not characteristic, and the diagnosis of ulcer of the duodenum was made only after roentgenological examination. At operation a chronic ulcer on the superior border of the duodenum and marked enteroptosis were found. Though this ulcer could have been excised easily, the patient's high pulse rate impelled me simply to infold the ulcer and that portion of the duodenum between it and the pylorus, and to do a posterior gastroenterostomy. This was very easily and quickly accomplished. The following day, though there was

* This procedure is extended until the pylorus is blocked at least temporarily.

considerable vomiting, the pulse rate was only 72; apparently little attention was paid to the vomiting because that symptom had played a very prominent part in her pre-operative history. The vomiting continued, however, and on the fourth day the pulse rate began to increase. Consulted by telephone, I advised gastric lavage and the withholding of all liquids by mouth; the patient refused to have the stomach tube passed, and demanded drinks. I saw her on the sixth day. External inspection of the abdomen showed immediately a low placed, greatly dilated stomach; the abdomen otherwise was absolutely flat. We could not persuade the patient to submit to treatment of any kind; she refused even to change her position in bed. The vomiting continued, her heart gradually weakened, and she died on the eighth day.

Her death was unquestionably due to the dilated stomach. There is little doubt in my mind that the fatal issue would have been avoided, had the woman submitted to gastric lavage. Whether the dilatation was secondary to obstruction below the anastomosis or was of the unexplainable variety that may follow any abdominal section I do not know. I am inclined to the opinion that it was of the latter variety because the death came so long after operation. High obstruction in the small intestine is rapidly fatal. Whatever the cause of the dilatation may have been, it is my first experience with it in gastric surgery.

The second fatal case was, likewise, one of chronic duodenal ulcer in a man of fifty-seven. His clinical history, going back eight to ten years, was entirely indefinite. His chief complaint had been colicky pain in the region of the umbilicus, entirely unaffected by the ingestion of food or the exhibition of alkalis. A very capable general practitioner, under whose care he had been, was inclined to believe that we were dealing with a progressive intestinal obstruction. The roentgenologist would not risk a diagnosis. My brief talk with the patient did not lead me to think of duodenal ulcer, but convinced me that he had some abdominal condition that demanded surgical investigation. An abdominal section disclosed a large chronic ulcer on the superior border of the duodenum, about $\frac{3}{4}$ in. from the pylorus. The duodenum was much deformed. The ulcer, with the surrounding infiltration, was as large as a silver quarter, and directly behind it, in the pancreas, was a considerable area of infiltration which made me suspect that there might be a chronic perforating ulcer of the posterior wall. The usual infolding with a posterior gastroenterostomy was done. The patient did perfectly well for seven days, and during that time ran a flat temperature with a pulse of about 60. On the eighth day he suddenly showed a very considerable rise of temperature (102°) and had some pain near the right costal border, with some vomiting; the temperature, however, fell rapidly, and in forty-eight hours was normal again, and thus continued for three days, the pulse holding about 60. On the thirteenth day the temperature rose rapidly to 104° , with a corresponding rise of pulse and severe pain and tenderness at the right costal border. The local physician opened and drained a right subphrenic abscess. There had been no escape of contents of the stomach or duodenum, and there was no dem-

onstrable connection between the field of operation and the abscess. Death occurred on the fourteenth day.

I am sorry that I was unable to do the second operation because I might possibly have enlightened myself on the cause of the infection. I have never seen another case of subphrenic abscess following an operation for unperforated ulcer of the duodenum. It is possible here that the infection may have been through the lymphatics or through the blood current (embolic) but I am puzzled to explain the run of absolutely normal temperature for a week, the sudden rise, the return to normal for three days and then the last and fatal rise. The case is one which certainly invites discussion.

The other patients, thirteen in number, had perfectly smooth convalescences; none suffered less than the three upon whom I felt obliged to do relatively severe operations (in two, "sleeve" resection of the stomach for chronic ulcer lying somewhat to the left of the Hartmann-Mikulicz line, and in one, resection of the pyloric end of the stomach and a portion of the duodenum for distinctly separate ulcers of both stomach and duodenum).

Brief references to a few points of technic may not be amiss here. The gastroenterostomies were all done with fine chromic catgut; at the most four interrupted, supporting sutures of linen were placed along the anastomotic line, sometimes only three and occasionally none. Four-row gastroenterostomies were the rule; five-row, the exception. In two cases, because of very thick abdominal walls, I could not get a satisfactory application of clamps to the stomach and in those instances I used the five-row method.

In doing "sleeve" resections the application of a right angle clamp placed on the lesser curvature above the proximal stomach clamp is a great aid in laying a secure suture line. It prevents too marked a slipping of the cut edges of the lesser curvature from between the jaws of the ordinary straight clamp. The difficulty of doing a rather high "sleeve" resection is also much lessened by freeing all adhesions about the ulcer before cutting the gastrohepatic omentum. Many of these ulcers high on the lesser curvature are pulled upward and particularly backward in the direction of the posterior wall by adhesions. A thorough freeing of the ulcer makes it far more easy of access.

The question of excising every duodenal ulcer and of securing a permanent blocking of the pylorus is still debatable, I believe. Excellent results from simpler methods are reported from clinics doing much duodeno-gastric surgery. In patients below par and in fat people I am careful to do as little as I conscientiously can. My experience in trying to do too radical work in fat patients is not very assuring. In patients who have had severe hemorrhage from duodenal ulcers, excision of the ulcer with permanent blocking of the pylorus should be the operation

of choice but it is not always possible to do this with reasonable safety. Then ligature of all visible vessels entering the indurated area and as complete an infolding as possible should be done. I have known a patient with chronic duodenal ulcer to die of hemorrhage ten years after a posterior gastroenterostomy.

Because in certain of my cases hernia has followed incision in the median line in the epigastric region (and such hernias are decidedly unpleasant and difficult of cure), my routine approach to the peritoneal cavity in gastro-duodenal cases is behind the belly of the left or right rectus muscle, the muscle fibres being retracted outward.

In the thirteen cases of chronic ulcer in these series, the appendix and gall-bladder were carefully examined for pathologic changes. In one case only did the appendix show what I was willing to consider inflammatory changes. In none was the gall-bladder macroscopically affected.

Flint's recent publication of his observations in the healing of gastrointestinal anastomosis warrants the continuance of the practice of keeping our patients on a low diet for at least two weeks after operation. His work shows that the healing of the mucous surfaces is only rarely complete before that time.

The occasional difficulty of distinguishing between a benign and a malignant gastric growth at operation is well illustrated by one case of this series. One of the patients showed an "hour-glass" stomach of moderate degree. This patient had undergone an exploratory abdominal section in Glasgow eight years previously and had been told that she had an inoperable cancer of the stomach.

DISCUSSION.

DR. PORTER: Hypertrophy of pylorus in adult. Pylorotomy. J. S. M., age 55, entered the Massachusetts General Hospital February 9, 1917. A perfectly well man until eight years ago. Indigestion for two years was followed by complete relief until two years ago when he suffered from acid stomach, occasionally vomiting without pain. Three months ago he had three fairly severe hemorrhages from the stomach within two hours: was confined to bed for three weeks. Thereafter developed nausea and a loss of forty pounds in weight. Test meal 200 c.c.; free hydrochloric acid 0.18; total acid 0.23. X-ray by Dr. Ariel George showed gall-bladder negative; stomach greatly dilated with prominent filling defect of pylorus and first portion of duodenum. Large six-hour residue.

Diagnosis. Obstructive lesion of the pylorus. Evident suggestion of chronic indurated ulcer; though we cannot exclude malignant disease. *Diagnosis* by Dr. Scudder and myself—chronic ulcer of pylorus; operation indicated.

Operation. February 11, 1917. Stomach normal; upper part of duodenum and pylorus bound to liver and gall-bladder by adhesions. Sphincter and adjacent pylorus much thickened like a doughnut. Through pylorus finger-tips meet. No red stippling; no frosting; no scar; no glands. This induration extended to the posterior part of the duodenum adjacent to the pylorus.

This seemed to be a case of hypertrophy of the

pylorus or possibly a malignant lymphoma, for ulcer and cancer seemed to be excluded on the above evidence. In view of the symptoms and the age of the man (55) I did a pylorotomy and a posterior gastroenterostomy. Symptomless convalescence, and discharged March 3.

Pathological Diagnosis. The pylorus shows a local nodular thickening of its posterior wall measuring $1\frac{1}{2}$ cm. at its thickest portion. On section the mucosa is pale and smooth. There are two shot-like small lymph nodes with a large prominent blood vessel in the great omentum.

Microscopical examination shows a normal mucosa with normal but greatly thickened and muscular wall. Some of the sections pass through the duodenum as evidenced by the presence of Brunner's glands. Sections of the lymph nodes show a normal lymph adenoid tissue. Sections of the large blood vessels above mentioned show considerable thickening of the intima.

Hypertrophy of the Pylorus. There may have been an old pyloric ulceration which gave rise to the bleeding with subsequent spasm and hypertrophy. This case suggests in the adult a hypertrophic pyloric stenosis of infants.

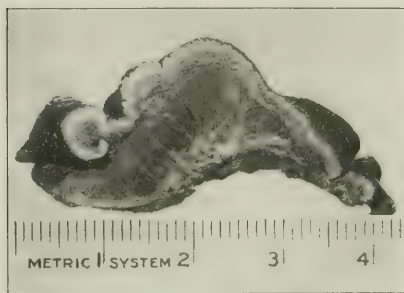


Note in the photograph the tumor growing from the gastric mucosa, projecting into the duodenum, and contrast the different appearance of the duodenum with the gastric mucous membrane. Stereoscopic photograph.

"Malignant Lymphoma Stomach." E. B., age 52, entered the Massachusetts General Hospital June 12, 1916. A perfectly healthy man until five months ago when he began to have pain in the epigastrium, radiating to sternum, without relation to meals. It was not at first severe, but has recently increased, coming on three or four times until night. He never vomits but raises a great deal of gas. Pain is sometimes relieved by food, sometimes not. He has lost twenty pounds. Abdominal examination negative; Wassermann test negative; test meal 75 c.c.; free hydrochloric acid absent; total acidity 0.7. X-ray shows a high stomach with sluggish peristalsis and irregular filling defect of antrum. There is no stasis.

Operation under Ether. Large mass involving antrum and media; few glands; liver negative. Ow-

ing to the excellent condition of this patient and the apparent diagnosis of cancer, a difficult partial gastrectomy was done after a transverse incision had been made at the lower rib margin to give better access to the stomach. This was followed by an anterior gastroenterostomy. Three days after operation there was consolidation of the left lower lobe with fever and increased respiration. The pneumonia was clearing up when on the 20th the wound broke open, and intestines were found covering the abdomen, with fibrin and pus adherent. In spite of replacement, under ether, death occurred on the following day.



Section through nodular thickening. Note tremendously thickened muscularis with normal mucosa.

Pathological Examination. Pyloric portion of the stomach measuring 13 cm. along the lesser curvature. Pylorus easily admits the index finger. On opening the stomach there is an irregular, roughly circular tumor mass measuring 7 cm. in its greatest diameter, having a superficial ulcerated surface with raised edges. This mass is situated on the posterior wall and extends across the lesser curvature on to the anterior wall. Posteriorly the line of excision lies very close to the tumor mass. While distal it is separated from the edge of the tumor by almost the entire length of the pylorus. On the posterior peritoneal surface the growth projects in the form of several discrete nodules. The stomach wall is much thickened. There are a few slightly enlarged soft lymph-nodes in the omentum.

Microscopical Examination. All sections from this tumor mass show a submucosa infiltrated with a richly cellular tumor made up of undifferentiated cells with very little stroma, containing numerous thin-walled blood vessels. These cells run into the mucosa to some extent but do not infiltrate the muscular coat as much. The mucous membrane shows areas of superficial ulceration where the tumor cells infiltrate it. Sections of the lymph nodes show a normal lymph adenoid tissue. Malignant lymphoma.

"Fibro-sarcoma stomach." H. H., age 48, entered the Massachusetts General Hospital Oct. 22, 1913. A previously healthy man with the exception of occasional gas and vomiting at rare intervals for twenty-eight years. Three months ago he began to complain of continual oppression in the pit of his stomach with some eructation and vomiting. The vomitus was sour, and after a month contained food eaten two days previously. There was no pain; he lost twenty-five pounds; Wassermann test was negative; haemoglobin 80%; fasting contents 65 c. c.; guaiac plus; no free hydrochloric

acid; x-ray showed obstruction at pylorus with stasis well marked. The shadow was crescentic and convex at the pylorus, as if a rounded tumor occupied this position.

Diagnosis at the time—gastric ulcer.

Operation, Oct. 23, 1913. A median epigastric incision under local anaesthesia showed a tumor, apparently polypoid, within the pylorus and projecting for one-half of its mass into the duodenum. Tumor was the size of a plum; growth was clearly neither ulcer nor cancer; there was no stippling; no frosting; no scar on surface; no enlarged glands. Posterior gastroenterostomy.

Nov. 19, 1913, under gas and ether, a pylorectomy was done, removing the first portion of the duodenum, which was sutured in layers and drained. Convalescence uneventful.

Pathological Examination. Portion of stomach and duodenum section shows the pyloric opening filled with a plum-sized tumor mass adherent to the greater curvature; surface ulcerated; reddened; section smooth and attached to the mucosa by a broad base. A few soft lymph nodes.

Microscopical examination showed a very cellular growth with a fibrous tissue and occasionally very large cells. It is covered by a little, thin mucous membrane. At the base there is an infiltration of the growth between the bundles of muscular tissue. Fibro-sarcoma.

At the end of a year the patient had gained forty pounds, and yesterday, March 5, 1917, by telephone he reported that he was never better in his life.

DR. BROOKS: In some cases I do as little as possible. About five weeks ago I saw a case in which the abdomen was absolutely rigid and the patient was in tremendous pain. The only history I could get was that for some time previous the patient had been troubled with pain low down on the right side. Upon opening the abdomen the appendix was found to be perfectly normal. The abdomen was filled with fluid. An exploration showed that there was a perforated duodenal ulcer. The patient's general condition was so poor that I simply put a plug of omentum into the perforation and held it there with a cigarette wick. The patient made an uninterrupted recovery. The question now arises: How soon should one think of any operative procedure such as a gastroenterostomy? I feel confident that if I had tried to enfold the ulcer in this case, the result might have been different.

DR. HARTWELL: (Showed specimens: 2) This specimen shows a distinct nodular thickening on the posterior surface of the pylorus. You can see that it is half again as thick as the normal organ. There was no scar, no change in the gastric wall as evidence of any previous ulcer.

The second specimen is a lymphosarcoma, the common type of sarcoma of the stomach or intestine. It doesn't usually produce any stenosis of the viscera; merely a diffuse thickening of the stomach wall. Here the posterior wall of the stomach is greatly thickened by the growth.

DR. LUND: I have had quite a number of these cases lately and two fatalities; both in cases in which the condition was very serious and the operation comparatively simple. One woman had had hemorrhages for years. She was under the care of a doctor who said to her, "You shall never be operated upon until it is absolutely necessary." Finally

it became absolutely necessary after an acute hemorrhage. I found the duodenum adherent to the abdominal wall and in attempting to find the bleeder, there was an escape of gas as I was separating the duodenum, and I sewed up the hole. She continued to have a temperature and died in nine days. This gas came from a subdiaphragmatic abscess that I had gotten into; there was more gas than pus in it.

The second was a chronic ulcer which had penetrated into the pancreas, the stomach was enormously dilated, and the patient very weak. He had a high temperature for about a week after the operation and died.

A third case is interesting as showing that a very large cancer may not reveal itself to the x-ray examination if it is situated on the posterior surface of the stomach, for the stomach, being filled out with bismuth, may entirely hide it when it is viewed antero-posteriorly. The man went to a hospital clinic, where they made a diagnosis of duodenal ulcer. He was out in the country, and one day vomited a lot of blood; I don't know just how much, but it covered the snow for some distance. I operated on account of this great hemorrhage and found a very extensive cancer. The cancer was on the pancreas, rather shaped like a teacup, and I could feel the rim of the teacup in the stomach. The adhesions to the stomach were such that it was impossible to do anything more than an exploratory operation.

GASTRO-JEJUNOSTOMY UNDER LOCAL ANESTHESIA IN THE TWO-STAGE OPERATION IN GASTRIC SURGERY.

By DAVID CHEEVER, M.D., BOSTON.

[From the General Surgical Service of the Peter Bent Brigham Hospital.]

In certain surgical conditions the performance of the indicated operation in two stages rather than in one finds increasing favor, and it is recognized that the effort to attain the ideal operative result by a single, rather than by two or even three procedures, may result in unnecessary disaster. As examples, may be mentioned the surgery of prostatic obstruction, of rectal carcinoma, and of intracranial tumors. But from the point of view of the patient, the repetition of a general anesthesia presents serious disadvantages; its necessity is faced with dread and apprehension, and too often in a patient discouraged by the prospect and already physically reduced, it is not well borne. It thus happens that, wherever possible, one or the other of the two stages is carried out under some form of local anesthesia; thus the preliminary suprapubic cystotomy is performed under local infiltration anesthesia, and the completion of the extirpation of rectal carcinoma by the perineal or sacral route is done under spinal anesthesia.

Certain surgical lesions of the stomach, or indeed of other organs, associated with or compli-

cated by pyloric obstruction, furnish an ideal field for the two-stage operation, the first stage consisting of relief of the obstruction by gastro-jejunostomy under local infiltration anesthesia. These patients may be reduced to a very extreme degree of asthenia and exhaustion by the practical starvation, so that a radical operation for the extirpation of the obstructing neoplasm, or even the giving of a general anesthetic for a palliative gastro-jejunostomy cannot be thought of. Frequently a wholly erroneous impression of the hopelessness of any attempt at a radical procedure is given by these cases. During the last two and one-half years the writer has carried out this preliminary procedure in ten cases, with one death, a mortality of 10%, or, adding Case No. 11, in which a transgastric cauterization and suture of a chronic perforating ulcer of the posterior wall of the stomach was carried out without gastroenterostomy, eleven cases, with a mortality of 9%. It should be emphasized that no selection of cases was made with regard to the operative risk, for during this period every case of pyloric obstruction which came under his observation and consented to the proposed procedure was operated on, in the conviction that unless the patient were in *extremis* the probability of remarkable relief to a distressing and indeed unbearable condition, at the price of a minimum of pain or discomfort, thoroughly justified the risk. The character of some of these cases as operative risks may be inferred from the following brief data: Cases 1, 4, and 5 (all adults) were so reduced that they weighed 79 lbs., 78 lbs., and 79 lbs., respectively; Case 6 was complicated by chronic nephritis with recent acute exacerbation and a phthalein output of 20% in two hours; Case 7 by syphilis, aneurysm of the arch of the aorta, aortic insufficiency and chronic nephritis; Case 9 by advanced prostatic obstruction, requiring constant drainage and prostatectomy one month later; Case 11 by chronic gout, emphysema, a chronic cardiac condition partly decompensated, chronic nephritis, a phthalein output of 12% and 15% in two hours (two determinations) and a chronic obstructing prostate. None of these cases would have been accepted by the writer for operation under a general anesthetic; yet the change wrought by the operation is well illustrated by Case 1, weighing 79 lbs., in whom at the preliminary gastro-jejunostomy a pyloric carcinoma was found, which was judged to be inoperable. Ten months later, having gained twenty-five pounds and having had no symptoms whatever, she insisted on an attempt at the radical removal of the mass, which now she plainly felt in the epigastrium. This was consented to on the ground that the necessarily incomplete exploration under novocaine might have been deceptive. At operation under ether, on Aug. 5, 1915, the inoperability of the tumor was confirmed. Not satisfied, after the expiration of another ten months, she was again explored by another surgeon, to whom her good

condition was sufficient evidence that the disease might be eradicated. She finally died, on Dec. 12, 1916, more than two years after the gastro-jejunostomy. This case illustrates also an important point, that these cases rarely dread or object to the prospect of a secondary operation, since the preliminary procedure has proved to be so little of an ordeal and has become so beneficial.

The technic employed has been of the simplest character. Cases 1 and 2 received a preliminary injection of 1/150 grain of scopolamine and 1/6 grain of morphine, the latter repeated just before the operation was begun; the remaining cases received 1/4 grain of morphine half an hour beforehand,—sometimes 1/6 grain was given during the operation, if prolonged. Anesthesia was always by infiltration with novocain solution, usually 1%, in two cases 5%. At two points in the operation pain may be expected, first when retraction is made to permit of inspection and palpation to determine the extent of the disease; second, when traction is made on the root of the transverse mesocolon preliminary to securing the loop of jejunum and to incising the mesocolon to enable the posterior surface of the stomach to be brought into the operative field. The difficulty of satisfactory determination of the extent of the growth and of the presence of and extent of metastases constitutes the least satisfactory part of the operation, but is much obviated by careful infiltration of the parietal peritoneum about the wound. The actual performance of the anastomosis is painless, and the patient exhausted by starvation and narcotized by morphine, sometimes falls asleep during it, to awake again when closure of the wound is begun, which is again aided by secondary infiltration of the peritoneum. The anastomosis is made by a vertical stoma, the posterior serous approximation by interrupted silk sutures, a posterior sero-muscular continuous suture of No. 1 chromic gut, a second continuous suture of the same material approximating the mucous edge, an anterior inverting Connell suture of No. 1 chromic gut, supported by interrupted mattress Lambert sutures of silk. In eight cases curved gastroenterostomy forceps were used,—in two cases adhesions prevented their employment.

The post-operative course is normally almost wholly uneventful. In the eleven cases, vomiting after operation was wholly absent except in three, one of whom vomited twice, and each of the other two vomited once. Among the cases not subjected to an immediate second-stage operation, and omitting the one fatal case, the average length of stay in the hospital after operation was fifteen days. There was immediate gain in weight in all cases, necessarily slight, owing to the brief stay in the hospital. One case gained 6 lbs. in twelve days, one 10 lbs. in 14 days, one 21 lbs. in 23 days. Three cases underwent only a second-stage operation; of the others (excluding the fatal case) two were so

comfortable that they did not desire an attempt at radical cure, and five presented advanced and radically inoperable malignant disease. Most of the latter desired, and had to be refused, the second-stage procedure. A typical case may be given in some detail.

CASE No. 10 (in this series). J. B., male, 56 years, Surg. No. 5975, for 20 years symptoms of chronic gastric ulcer, not seriously interfering with his work until five years ago, when persistent vomiting and loss of weight began. Examination showed a large-framed but emaciated and feeble-appearing man whose weight had fallen from 165 to 122 lbs. General examination negative except for upper abdominal distention due to an enormous stomach. Gastric analysis showed 72-hour stasis, normal acidity. Radiographic bismuth studies showed a much dilated atonic low stomach, marked narrowing at the pylorus, an irregularity of the lesser curvature just proximal to the pylorus, the whole suggesting an annular lesion at the pylorus, not necessarily carcinoma. He also presented a characteristic epithelioma of the lower lip with a firm sub-mental node. This patient was considered a fair risk for pylorotomy, but it was thought that if he could be got into better condition a radical operation could be done simultaneously on the epithelioma. On December 30, 1916, under 1% novocain anaesthesia, the abdomen was explored and a markedly indurated saddle-shaped lesion was found just proximal to the pylorus, on the lesser curvature. No metastases were noted, but carcinoma implanted on ulcer could not be ruled out. A posterior gastro-jejunostomy was done, placing the stoma vertically in a line with the cardia. In twelve days he had gained six lbs., was on a full diet, and had gained much in strength. The second stage was at once carried out under ether anaesthesia, the pylorus, antrum, and lesser curvature being excised. The epithelioma of the lip was then excised by a quadrilateral incision and a complete dissection of the right side of the neck performed. He was discharged symptomatically well in fourteen days.

The one fatal case deserves additional mention:

CASE No. 2 (this series). J. B., male, 50 years, Surg. No. 1969, entered the hospital with a history of rapid loss of weight and strength, six weeks of abdominal pain, persistent vomiting and unproductive cough, 30 lbs. loss of weight in six weeks, to 95 lbs. Abdominal distention due to dilated stomach; a large, firm mass palpable in epigastrium. Wassermann reaction double plus. As the vomiting ceased at first on his being put in bed, and the condition was recognized as hopelessly inoperable, it was thought worth while to try salvarsan, on the assumption that the lesion might be syphilitic. Three weeks later, vomiting being again severe and his condition deteriorating, he was transferred to the surgical service. Scopolamine 1/150 grain, and morphine 1/6 grain, reduced him nearly to unconsciousness, but his condition did not seem immediately critical. A large neoplasm of the pylorus was found with metastases to the liver and parietal peritoneum. A posterior gastro-jejunostomy was performed. There was no post-operative vomiting, and the pain was completely relieved. He took un-

restricted liquid nourishment freely and with great satisfaction. His temperature became high, but no symptoms could be attributed to any organ. There was no evidence of peritonitis. On the fifth day, after sitting up in bed and drinking a cup of broth with enjoyment, he lay down to rest. A few minutes later his pulse was found to be imperceptible, and death quietly supervened.

If any selection of cases were made, gastro-jejunostomy under novocain anesthesia should have a very low mortality. But the possible relief afforded by this operation should almost never be withheld, and in such cases as the above, there will necessarily be an occasional death.

An outline of the eleven cases, which form the basis of this paper, is appended.

CASE 1. I. C., female, 51 years, Surg. No. 1964. Gastric symptoms for 5 years; recently constant vomiting and 40 lbs. loss of weight to 81 lbs. Visible and palpable epigastric tumor, marked stasis; bismuth radiograph showed pre-pyloric defect; hypochlorhydria.

Operation, October 24, 1914. Scopalamine 1/150 grain, and morphine 1/6 grain,—the latter repeated; local infiltration with 1% novocaine. A large pyloric carcinoma was found with glands in the gastro-hepatic omentum, considered inoperable; posterior gastro-jejunostomy; no post-operative vomiting; complete relief of symptoms; discharged in 13 days.

Re-admitted 10 months later and explored under ether in the hope that the first impression was erroneous; inoperability confirmed. Not satisfied, ten months later she sought another surgeon and was again explored. Died 8 months later.

CASE 2. J. B., male, 50 years, Surg. No. 1969. (Noted above.)

CASE 3. J. J. V., male, 54 years, Surg. No. 2247. Occasional vomiting for one year; frequent vomiting, pain and loss of weight for 5 weeks. Palpable mass in the epigastrium, hyperacidity; positive guaiac; gastric stasis and pre-pyloric irregularity by x-ray.

Operation, December 28, 1914. Morphine, 1/4 grain; 1% novocaine infiltration anaesthesia. Extensive carcinoma of pre-pyloric region, especially of the lesser curvature, inoperable. Posterior gastroenterostomy. No post-operative vomiting or other symptoms; gained four pounds in the 13 days of his stay. Subsequently reported 18 months later with marked cachexia and fluid in the abdomen; vomiting was just beginning to recur.

CASE 4. R. McL., female, 50 years, Surg. No. 3365. Failing strength for 1 year; abdominal distress, anorexia, vomiting, loss of weight for three months. Enormously dilated stomach, no mass felt; achlorhydria; no bismuth radiographic examination made. Weight 73 lbs.

Operation, August 9, 1915. Morphine 1/4 grain, 1% novocaine infiltration anaesthesia. Enormous stomach, large obstructing carcinoma at pylorus with numerous small metastases in glands and omenta. Posterior gastro-jejunostomy. No vomiting or untoward symptoms after operation. Discharged in 24 days, having gained 21 lbs.

CASE 5. J. O. B., female, 41 years, Surg. No. 3676. Vomiting and epigastric pain for one year. 35 lbs. loss of weight to 79 lbs. Mass felt. Bismuth radiographs show filling defect of pre-pyloric region, stasis. Slightly diminished acidity.

Operation, October 16, 1915. Morphine 1/4 grain; 1% novocaine infiltration anaesthesia. A large annular carcinoma of the pre-pyloric region was found extensive but without demonstrable metastases. Posterior gastro-jejunostomy; vomited twice immediately after operation; no subsequent untoward symptoms. Discharged in 20 days. A second stage might have been attempted here, but patient was lost sight of.

CASE 6. J. M., male, 59 years, Surg. No. 3742. Epigastric pain and burning sensation for two years; vomiting for two months, very severe for one month; marked emaciation. Bismuth radiographs suggested an ulcer on the lesser curvature near the pylorus, also a distorting lesion at the pylorus; moderate stasis. Hyperacidity, chronic nephritis with recent acute exacerbation, renal calculus, phthalein elimination 20% in two hours.

Operation, October 28, 1915. Morphine 1/4 grain. Local infiltration with 1% novocaine. Indurated ulcers just distal to pylorus and on lesser curvature 10 cm. proximal to it; suspicion of malignancy. No glands or metastases noted. Posterior gastro-jejunostomy. Vomited once, otherwise no untoward symptoms. Discharged in 14 days, eating unrestricted diet. Reported 7 months later, no gastric symptoms, marked gain in weight and strength; some pain in right side (renal calculus?).

CASE 7. W. L. W., male, 57 years, Surg. No. 5119. Pain and distress in abdomen for one year; vomiting and sensation of "obstruction" for three months, 62 lbs. loss of weight to 132. Palpable mass in epigastrium; bismuth radiographs show extensive neoplasm of pyloric antrum, marked stasis. Hypochlorhydria. Fusiform aneurysm of arch of aorta, aortic insufficiency; positive Wassermann, haemoglobin 50%.

Operation, July 28, 1916. Morphine 1/4 grain; local infiltration with 1% novocaine. Extensive neoplasm of pyloric end of the stomach involving the head of the pancreas with neighboring glands; metastases in liver. Posterior gastro-enterostomy, vomited once on the fifth day. Discharged 14 days after operation. No gastric symptoms, liberal diet.

CASE 8. C. T. G., male, 31 years, Surg. No. 5868. Pain for 6 months, three or four hours after eating; frequent coffee-ground vomitus and tarry stools for 12 days. Bismuth radiographs show large annular carcinoma of pyloric antrum with stasis. Moderate hyper-acidity.

Operation, December 7, 1916. Morphine 1/4 grain; local infiltration with 1% novocaine. Massive tumor size of a fist, just proximal to pylorus, involving both anterior and posterior surfaces but not the greater curvature. Glands along lesser curvature involved. Posterior gastro-jejunostomy. Growth possibly removable later. No vomiting or gastric symptoms after operation; discharged in fifteen days, eating voraciously and having gained 10 lbs. in weight.

CASE 9. L. A., male, 71 years, Surg. No. 5879. Losing weight and strength for 4 or 5 months. Abdominal pain and persistent vomiting for six weeks. Marked dysuria. Bismuth radiographs show large

pre-pyloric defect, with 8-hour stasis. General condition rapidly deteriorating.

Operation. December 13, 1916. Morphine $\frac{1}{4}$ grain, local infiltration anaesthesia with 1% novocaine; large annular carcinoma of pyloric antrum, suspicious thickening about head of pancreas, no certain metastases. Posterior gastro-jejunostomy, no post-operative vomiting or other gastric symptoms. One month later his condition permitted a perineal prostaticectomy. Discharged two months later, comfortable and eating voraciously; little gain in weight.

CASE 10. J. B., male, 56 years, Surg. No. 5975. (Noted above.)

CASE 11. P. S. D. Male, 58 years, Surg. No. 6117. Pain, anorexia, occasional vomiting for 4 or 5 months, with much loss of strength, and of 50 lbs. weight. Bismuth radiographs show evidence of perforating gastric ulcer of posterior surface of stomach; slight hyperacidity; occult blood in stools. Case complicated by chronic gout, emphysema; mitral regurgitation, chronic nephritis, obstructing prostate. Hemoglobin 35%, phthalein elimination 12 and 15% in 2° (two determinations); a very poor operative risk.

Operation. January 26, 1917. Morphine, $\frac{1}{4}$ grain. Local infiltration anesthesia with 1% novocaine. Many adhesions, rendering approach difficult. Transgastric cauterization and suture of posterior perforating ulcer of stomach. Gastro-jejunostomy impossible on account of adhesions. Discharged fifteen days later; no post-operative gastric symptoms; pain and vomiting completely relieved; eating a liberal diet.

(End results of these cases are not included, since they do not affect the principle under discussion.)

DISCUSSION.

DR. CODMAN: I noticed that Dr. Cheever spoke of the low weight of some of his patients. I once did a gastroenterostomy on an elderly woman at the Massachusetts General Hospital. She weighed only 56 pounds before the operation, but gained 40 pounds before she left the Hospital.

DR. LUND spoke of having used the Moschcowitz transverse incision for these cases.

DR. PORTER had used it, but had been disappointed with the exposure.

DEMONSTRATION OF BONE WIRING INSTRUMENTS.

JOHN DUFF, JR., M.D., CHARLESTOWN, MASS.

(By Invitation.)

ABOUT three years ago, having witnessed a number of bone-banding operations at the Boston City Hospital, it seemed that the most difficult part of the whole procedure was passing the band around the bone, and it occurred to me

that an instrument might be devised to simplify matters.

The first two instruments that I devised to overcome this difficulty, namely, a strong clamp bent in a curve to a right angle with a peg the size of the hole in a bone-band, which fitted into a socket in the opposite jaw, and the second, a soft silver strip with a bougie tip on one end and a projected hook on the other, are not universally practical. The clamp is not satisfactory save in selected locations such as the middle third of the humerus or femur or, in other words, locations where large exposure can be obtained. The silver strip is not ideal because it is difficult to handle, although it is possible to bend it to any desired curve, which is more or less of an advantage. The third instrument is, in the opinion of the men who have used all three, the best. A fair idea of this instrument may be gained from Plate A. It is made on the

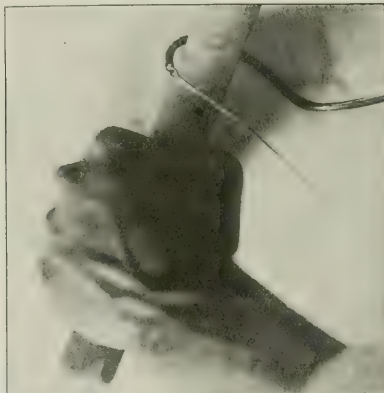


PLATE A.

principle of the spiral with two curves in opposite directions so that, when properly applied, a twist of the wrist sends the instrument around the bone. The tip has a hook which fits the hole in the desired appliance, whether it be band or wire; it is slightly beveled but not sharp.

About six months ago, in discussing with Dr. Cotton bone-banding in general, we both recognized the value of an instrument which would tighten wire around bone and hold it taut and rigid while being twisted; so, with his approval, I started work on such an instrument, and, in a large measure, because of his advice and suggestions, the final bone wirer has been perfected.

The old principle of the "hose pliers," which stretch instead of compress, is well known, so the work was started with this as a basis; but as suggested above, they will neither hold the wire tight when it is stretched, nor hold it rigid while being twisted. The first difficulty was obviated by the application of a rachet to the handles. The second problem was met by the addition of the projection or strut, to the axis of the pliers;

the strut is, incidentally, movable, for convenience and flexibility.

In this way the two great difficulties (the inability of the "hose pliers" to hold a stretched wire rigid and taut at the same time) were overcome, but several other difficulties arose. Among them, when the wire was twisted, a V-shaped "dead space" remained between the first twist and the bone. This was not satisfactory, because it left just that much slack, and unless the bone fragments be held absolutely immobile, the wire fails of its purpose. To obviate this "dead space" a flat disk, held by the two members of the strut, in which is an oval opening (not shown in the plates), and a bar above and parallel to the long axis of the oval, were added: when the wires are in place and on the stretch, the oval gives the crossed wires the first turn and the bar throws the last twist down, forcing down the first twist till it is practically flush with the bone surface.

So much for the bone wirer,—but what of the wire? Which type is the best? After considerable experimentation, malleable phosphor-bronze wire No. 17 gauge B & S was found advisable because it stands torsion best and is not acted upon by the tissues. The wire may be cut to any desired length and one end looped and brazed to fit the hook.

Method of Applying Wire and Twisting.—The wire is passed around the bone by the instrument shown in Plate A and the ends crossed, one being longer than the other, to facilitate insertion through the oval slot, and the ends are brought up one on either side of the bar. The loop is attached to the hook, the loose end is drawn as tight as possible and fastened in the clamp, opposite the hook. Next the handles are compressed and the wire is drawn to any desired tension. To twist the wire the whole instrument is turned until the wire is twisted up to the bar which marks the limit. Two long ends are then cut just above the bar and the instrument is removed. The twisted end of the loop may be disposed of in any convenient way.

Advantages of Wire Loop Over Bone Band:

1. More easily applied.
2. More easily removed when necessary.
3. Very much narrower than a band. (Thereby acting as a smaller foreign body and lessening the possibility of non-union).
4. One or more wires may be used where only one band is practicable.
5. May be used on small bones of the body.
6. Is relatively strong as a band and plenty strong enough.

This instrument, together with the wire, is offered as an apparent solution of the difficulties attending the old bone-banding operation in spiral and oblique fractures, both operatively and post-operatively, but its advantages as regards transverse fractures, on which work is now being done, has not been absolutely determined.

Original Articles.

A REPORT OF THE HARVARD INFANTILE PARALYSIS COMMISSION ON THE DIAGNOSIS AND TREATMENT OF ACUTE CASES OF THE DISEASE DURING 1916.

BY FRANCIS W. PEABODY, M.D., BOSTON.

THE formation of the Harvard Infantile Paralysis Commission was largely stimulated by the apparently encouraging results obtained in the treatment of the acute stage of the disease with the blood serum of immune patients who had recovered from a previous attack. The object of the Commission was to provide experts who should be at the service of physicians to assist in (1) the early diagnosis of the disease, by means of the examination of the spinal fluid, and (2) the preparation and administration of immune serum. On account of the small staff and of the limited facilities of the Commission it was decided that the work must be restricted to the districts immediately in and about Boston. It was therefore necessary to refuse to undertake the care of a considerable number of patients who resided outside the field which could be satisfactorily looked after. Since the use of the immune serum in this disease is still a measure, the value of which has not been fully established, it was considered proper to refuse to give serum to outside physicians for administration. The fact that all the serum has been given by the physicians employed by the commission adds much to the weight of the results obtained.

The work reported here was begun on September 26th, 1916, and virtually ended on December 15th, 1916. The active work of the Commission was carried on by Drs. Charles B. Spruit, C. S. Curtis, David M. Hassman, and John A. Wentworth. It is to the conscientiousness and industry of these men that whatever success the work of the Commission may have attained, is in large part due. From the beginning the Commission has been closely associated with the State Department of Health, and has been greatly helped by the Commissioner of Health and his assistants.

The work undertaken falls naturally under two heads, that in the laboratory and that in the field.

LABORATORY WORK.

The laboratory work, which was in charge of Dr. Spruit, consisted in the collection and preparation of immune serum. Announcement of the objects of the Commission was made in a number of daily newspapers, and as a result of these articles a considerable number of persons volunteered to have their blood taken for the preparation of serum. Specimens of blood were taken from 33 individuals. There is little doubt but that if additional serum had been needed

it would have been possible to get in touch with many more persons who would have been willing to perform this service.

The subjects were bled from an arm vein in a comparatively painless manner. The blood was allowed to clot and the serum pipetted off. The serum was then centrifuged at a high rate of speed in order to remove all blood corpuscles. In satisfactory samples there was little or no evidence of hemolysis. The serum was inactivated at 56° C. for 1/2 hour. It was then tested for sterility by cultures, and in each instance the Wassermann test was applied. The serum was finally put up in small sterile bottles which contained 10 to 20cc. Accurate records were kept of the histories of the donors, and each serum was given a number corresponding to the number on the donor's card. Whenever the serum was used in the treatment of a case the number was recorded so that the records show exactly the result of the treatment with each individual serum. Furthermore, samples of each serum were preserved for further experimental study.

In the selection of an immune serum for use in the treatment of acute poliomyelitis it is reasonable to assume that the time interval between the acute attack and the drawing of blood from the donor is of some importance. Amoss and Chesney¹ used sera from persons who, with two exceptions had been convalescent for eight weeks or less. These two exceptions had passed through the disease 2 years before. They believe that the serum of recently recovered cases contains immune substances in greatest concentration, and "suggest that if serum is used from patients whose attacks are more remote, correspondingly larger doses should be employed." Zingher² employed sera obtained from persons in whom the acute attack had occurred from 2 months to more than 30 years before the blood was taken. He divided his patients into groups according to the serum used in the treatment, but states: "It must not be overlooked, however, that we have probably obtained therapeutic results as good after the use of serum from persons who had the acute attack more than 15 years previously, as from those who had the acute attack from one to 15 years before." Unfortunately we have had no experience with serum from recently recovered cases. As will be seen from Table 1, the sera used in the treatment of our cases was obtained from persons who had passed through the acute attack of the disease from 3 to 40 years ago.

FIELD WORK.

Arrangements were made by which one of the experts employed by the Commission would be able to respond to the call of a physician at any hour of the day or night. No patients were seen except at the direct request of the physician in charge of the case. All cases were seen as soon as possible after the call was sent in, but of course, when many requests were coming

in at the same time there was necessarily some delay in getting to the more distant cases. It may be well to describe in detail the methods employed by the field diagnosticians. The patient was visited if possible in association with the family physician. The history was taken and a careful general examination was made. If there was any indication that the case was one of poliomyelitis it was suggested that a lumbar puncture be made, although the decision as to whether this should be done or not was left to the family physician. In only a few instances did either the family or the physician object to the procedure. After the spinal fluid had been obtained it was examined, with the aid of a microscope which was set up near the bedside, and a rapid count determined whether there was evidence of a meningitis. In most of the cases where the spinal fluid pointed to poliomyelitis, treatment was instituted. The lumbar puncture needle was left in position after the spinal fluid was obtained and with only a few minutes delay it was possible to inject the immune serum intraspinally. The amount of serum for each treatment was about 10 ccm. The patients were followed by the physicians of the Commission or by the family physician and further treatments were given when they seemed to be indicated. One result of the injection of serum was an increase of the meningeal symptoms and a marked rise of the cell count. Although this increase in symptoms was at times rather disturbing it was a transient phenomenon and no serious results were ever observed.

The amount of serum administered intraspinally was usually about 10 ccm. at one injection. Only rarely was more than 15 ccm. given, because we feared the effect of raising the pressure in the spinal canal. Only one treatment was given in 27 of the 51 preparalytic cases, while 16 received two treatments, 6 received three, and 2 received four treatments. Injections were usually given at intervals of 12 to 24 hours and whether or not treatment was repeated depended on the clinical picture. Zingher used 15 ccm. serum, repeating in 12 to 24 hours. Amoss and Chesney injected serum intraspinally and intravenously or subcutaneously. The subdural injections varied in amount from 5 to 25 ccm.; the subcutaneous from 15 ccm. to 60 ccm.; and the intravenous from 20 ccm. to 100 ccm. They believe that the larger the amount of serum, and the earlier the administration in the course of the disease, the better the results. The majority of our preparalytic cases were treated within 48 hours of the onset of the disease, but the figures are not large enough to allow of any conclusions being drawn.

The total number of cases visited by the physicians of the Commission was 187. Of these the diagnosis of poliomyelitis was made in 123 and the remaining 64 were cases of other diseases. Among the cases to which the Commission was summoned and which did not turn out to be acute poliomyelitis were instances of the

following conditions: infectious diarrhoea, gastro-enteritis, influenza, vaccination, hysteria, pulmonary tuberculosis, and fever of unknown cause, and a considerable group of patients in whom no diagnosis was made. The latter group included chiefly children with mild digestive upsets. There were also a number of persons in whom a diagnosis of "no disease" was made and whose symptoms were apparently due to nervousness. In addition to these, 4 cases of meningitis were seen. Of these 2 were of the cerebro-spinal type, one was tuberculosis, and one was syphilitic.

Of the 123 cases of poliomyelitis seen, 54 were first visited in the preparalytic stage, 65 were recently paralyzed cases, and 4 were cases of old paralysis. Of the total of 54 preparalytic cases seen, 51 were treated with immune serum. Two of the untreated cases were apparently of the abortive type of the disease and it was considered unnecessary to give them any injection. Of the 51 cases treated with intraspinal injection of immune serum, 35, or 69%, recovered without paralysis; 11, or 21%, recovered with paralysis; and 5, or 10%, died. In the 11 paralyzed cases the results were slight in 6. The details of these cases are to be found in Table 1.

Sixty-nine paralyzed cases were seen. Of these 4 had had the disease a long time before they were seen, and 65 had been recently paralyzed. Of the latter cases 60 were treated with immune serum. It is rather difficult to form any accurate conception as to whether cases in this group improved or did not improve as a result of treatment, but a rough classification indicates that 8, or 12%, showed definite rapid improvement, while 33, or 51%, did not improve much after the injection of the serum, or became worse. 21 cases, or 32% died, and in 3 cases, or 5%, the result is unknown. In the total of 123 cases there were 26 deaths, giving a mortality of 21%. This is just about the average mortality of the epidemic.

In discussing the effect of treatment by means of intraspinal injection of immune serum it seems wisest to disregard the cases which were already paralyzed when treatment was administered. One could hardly expect any definite improvement after the spinal cord was already involved sufficiently to cause a peripheral paralysis, but it was hoped that the progress of the disease might be stopped. Whether such a result was occasionally obtained or whether the cessation of the spreading of paralysis was always spontaneous, it is, of course, impossible to determine accurately.

The results of treatment in the cases seen in the preparalytic stage of the disease are at first sight rather encouraging, and the number of patients is large enough to allow the drawing of fairly definite conclusions. The mortality was 10%, which is only one half of the general mortality of the epidemic. The majority of the fatal cases were, moreover, acute fulminating instances of the disease and it is hardly conceiv-

able that any method of treatment could have been of value. Only 21% of the cases (excluding the fatal cases) became paralyzed at all and in more than one half of these the paralysis was extremely mild. Of most importance however, is the group of patients in which no evidence of paralysis appeared. This includes 69% of the total number of cases seen in the preparalytic stage. The result is apparently very gratifying, but a critical consideration requires a comparison with the outcome of a similar group of untreated cases. The necessary data for control are not available from our own experience but Dr. George Draper of New York has been kind enough to put at our disposal some of the results as yet unpublished, obtained by him in the study of the present epidemic in Long Island. According to these statistics of 85 preparalytic cases, in which the diagnosis was proved by lumbar puncture and in which no serum was administered, 48, or 56%, developed no paralysis. The results in our serum cases were thus about 10% better than were the results in Draper's untreated cases, but in the consideration of the effect of a therapeutic measure in so variable a clinical condition as acute poliomyelitis, such a difference must be regarded with great conservatism. It is, however, also of interest to note the results of the administration of serum by other workers. Zingher reports that of 54 cases treated in the preparalytic stage, 44, or 82%, did not become paralyzed. Twenty-five of these patients were seen at the Willard Parker Hospital, and of this group 24, or 96%, did not become paralyzed. Zingher also reports that 9 out of 10 cases treated intraspinaly with normal human serum failed to develop paralysis. Amoss and Chesney treated 14 cases in the preparalytic stage of the disease by intraspinal and intravenous or subcutaneous injections of immune serum. Two of these died, 2 developed slight paralysis, and 10, or 71%, remained unparalyzed. The best results were obtained in the patients who were treated earliest (within 48 hours of the onset), and who received the largest amounts of serum (over 30 ccm.) both intraspinaly and intravenously or subcutaneously. The considerable variation in the results obtained by different workers in the administration of immune serum may be due in part to differences in technic, but no doubt the character and number of cases studied is an important element. None of these series is as large as it should be when one considers the great variation in the clinical course of the disease under consideration. For the proper interpretation of the results of treatment it is essential that we should have a much more complete knowledge of the natural history of the disease. At the present time we have only an imperfect idea as to what proportion of persons affected with the disease become paralyzed even if no treatment is instituted. Nevertheless there is apparently a general agreement among those who have used the immune serum as to its harmlessness, and as

TABLE I.
ANALYSIS OF RESULTS OF TREATMENT IN 51 PREPARALYTIC CASES OF POLIOMYELITIS.

NAME	CASE NUMBER	AGE, YRS.	AGE, MOS.	DURATION	CELL COUNT IN SPINAL FLUID	No.	SERUM	AMT.	INTERVAL SINCE ATTACK OF DONOR	NUMBER OF TREATMENTS	REMARKS
E. D.	2	12		4 days	84	15		30 cc.	22 years	3	Developed slight facial paralysis.
						6			3 years		
M. C.	7	7		6 days	112	3		7.5 cc.	7 years	4	No paralysis.
						5		5 cc.	25 years		
								5 cc.	6 years		
J. W. B.	8	8		8 days	210	8		5 cc.	40 years	2	Developed paralysis of the external rectus.
						9		7.5 cc.	25 years		
J. C.	12	2		2 days	bloody	11		5 cc.	25 years	2	Developed paralysis of left arm and both legs.
								7.5 cc.	7 years		
J. H. B.	13	2	9	12 hours	150	9		9 cc.	25 years	1	No paralysis.
C. W. C.	15	2	6	1 day	56	9		7.5 cc.	25 years	1	Developed paralysis of extensors of right foot.
D. V.	16		15	2 days	234	10		7 cc.	6 years	1	No paralysis.
E. A.	20		18	1 day	72	10		10 cc.	4 years	2	No paralysis.
						11		10 cc.	7 years		
H. B.	24	5		1 day	146	11		10 cc.	7 years	2	No paralysis.
						15		10 cc.	22 years		
A. C.	22	2	6	2 days	110	11		7 cc.	7 years	1	No paralysis.
G. D.	29	7		3 days		11		7 cc.	7 years	1	Died. (There was perhaps paralysis of the muscles of respiration when first seen.)
R. S.	35	2		2 days	109	11		5 cc.	7 years	1	No paralysis.
W. S., Jr.	103	4		1 day	350	26		10-10-10 cc.	32 years	3	Developed paralysis of right arm.
H. McG.	104	7		1 day	180	26		10-10 cc.	32 years	2	No paralysis.
K. C.	106	3		5 days (?)	233	23		8-10 cc.	3 years	2	No paralysis.
M. B.	110	3		2 days	167	26		9 cc.	32 years	1	Developed slight facial paralysis.
E. W.	111	7		1 day	300	25		10-10-10-10 cc.	23 years	4	Developed slight weakness of right leg.
H. L.	112	5		2 days	175	25		10-10 cc.	23 years	2	No paralysis.
M. McD.	115	3	9	3 days	520	25		10 cc.	23 years	2	Began to develop respiratory paralysis on day after treatment. Died.
						16		10 cc.	18 years		
M. L.	123	7		3 days	60	16		10 cc.	18 years	1	No paralysis.
J. McC.	128	4		2 days	80	21		10 cc.	6 years	1	No paralysis.
F. McC.	130	10		6 days (?)	80	16		10 cc.	18 years	1	No paralysis.
A. O'N.	140	6		3 days	38	16		10 cc.	18 years	2	Developed partial paralysis of the right leg.
						29		10 cc.	39 years		
S. P.	146		22	5 days	233	29		8 cc.	39 years	1	No paralysis.

R. B.	147	11	2 days	365	29	10 cc.	39 years	1	No paralysis.
A. W.	149	8	2 days	260	29	10 cc.	39 years	1	No paralysis.
F. W.	153	7	1 day	577	13	10 cc.	5 years	3	No paralysis.
					29	10 cc.	39 years		
G. G.	158	2	6 days	220	29	10 cc.	39 years	1	No paralysis.
A. G.	177	13	3 days	80	unknown	unknown			
H. McK.	178	5	2 days	400	13	10 cc.	5 years	1	No paralysis.
					21	10 cc.	6 years	2	No paralysis.
W. A. C.	4	21	3 days	500	34	10 cc.	30 years	3	No paralysis.
						15-15-15 cc.			
R. W. B.	38	4	12 hours	1980	18	7.5 cc.	7 years	1	Died 48 hours after onset.
B. S.	44	23	1 day	310	11	8 cc.	7 years	1	Died 24 hours later.
M. H.	46	5	1 day	250	15	10 cc.	22 years	3	Knee jerks on right were diminished when child was first seen. Developed paralysis of both legs.
R. G.	52		2 days	860	18	10 cc.	7 years	1	No paralysis.
E. M.	54	21	2 days	120	27	7 cc.	14 years	2	No paralysis.
					11 and 18 (mixed)	15 cc.	7 and 7 years		
D. O'C.	55	8	3 days	240	12	10 cc.	7 and 7 years	2	No paralysis.
						10 cc.	15 years	2	No paralysis.
M. H.	48	3	12 hours	34	12	7.5 cc.	15 years		
K. W.	63	4	2 days	80	15	10 cc.	22 years	1	No paralysis.
					30	10 cc.	9 years	2	No paralysis.
J. C.	65	2	1 day	165	30	10 cc.	9 years	1	No paralysis.
B. B.	70	3	1 day	400	31	10 cc.	9 years	2	Developed paralysis of both legs.
					15	8 cc.	7 years		
T. H. B.	72	22	1 day	200	30	8.5 cc.	22 years	1	No paralysis.
J. H.	74	3	2 days	1000	15	8.5 cc.	22 years	1	No paralysis.
					10	18 cc.	6 years	1	Slight weakness of back muscles noted.
B. C.	78	12	24 hours	365	26	9 cc.	32 years	2	No paralysis.
					15	8.5 cc.	22 years		
A. M.	79	8	1 day	150	23	10 cc.	32 years	1	No paralysis.
D. A.	83	5	5 days	270	26	7 cc.	32 years	1	No paralysis.
G. H.	95	3	2 days	160	24	10 cc.	30 years	3	Received two serum treatments at Hosp. No. unknown. Developed paralysis of both legs, and deltoids.
D. E. A.	98	5	2 days	107	20	6.5 cc.	9 years	1	No paralysis.
H. D.	100	4	5 days		14	10 cc.	22 years	1	No paralysis.
M. P.	101	14	2 days	120	25	10 cc.	23 years	2	Weakness of quadriceps noted on first visit. Died on day following treatment.
J. McL.	102	8	2 days	150	25	10 cc.	23 years	1	No paralysis.

to the fact that in certain, possibly in numerous, instances its administration is beneficial.

While the results obtained in the treatment of acute cases of infantile paralysis by the intraspinal injection of immune serum have been somewhat less satisfactory than might have been hoped, it is of some importance that this community has had its own experience with what has seemed to be the most promising method of treating the disease. There is evidence in favor of the use of serum in the preparalytic stage, but its administration in paralyzed cases, except where the disease is progressing, should probably be avoided, for it is quite possible that further harm might be done to the spinal cord by increasing the pressure in the spinal canal. It is also probable that in any further work with the treatment of the disease the intravenous injection of serum in very early cases should be taken up.

The work on the diagnosis of poliomyelitis with the aid of the examination of the spinal fluid has been of considerable importance. In all early cases the examination of the spinal fluid has shown evidence of a meningitis and the cell count has ranged from 34 to 1,980 per ccm. in the preparalytic stage. In general the more severely affected patients have shown the higher cell counts but this is not at all a constant finding. In the earliest stages of the disease about 40 to 90% of the cells in the spinal fluid are of the polymorphonuclear type, but with the progress of the disease the mononuclear cells tend to predominate. In general, the cell count, which is done rapidly and easily, has proved to be the most satisfactory method of making a diagnosis in preparalytic cases of infantile paralysis. Although the clinical picture of the acute stage of the disease is fairly typical, so that a physician who has seen a number of cases is often able to make the diagnosis, nevertheless any confirmatory evidence is of great assistance. Such evidence the examination of the spinal fluid seems to provide.

Of great importance, as indicating the value of the examination of the spinal fluid as a diagnostic measure in acute poliomyelitis, are the results obtained from the lumbar puncture of cases which proved subsequently not to be infantile paralysis. The spinal fluid was examined in 31 such cases. In 2 instances a cell count of 12 and 15 respectively were obtained and in all other instances the cell count was below 10. This evidence is of great importance as showing that in the febrile, gastro-intestinal and other conditions most likely to be confused with infantile paralysis the spinal fluid is almost always normal. All our cases were followed in such a way that there is no reason for us to believe that the diagnosis of infantile paralysis was made in cases in which it was not justified. There is, however, a certain source of error in that some of the so-called abortive cases may never develop to the stage of involvement of the nervous

system. Draper's³ results make this quite probable.

Our results in the diagnosis of poliomyelitis have shown that with the assistance of the family physician an early diagnosis can be made in a large percentage of cases. The making of an early diagnosis is of importance both for the proper isolation of the case and for the treatment of the case. The procedure adopted by the Commission for the early diagnosis and treatment of patients has proved to be, in general, satisfactory when applied over a limited area, and there is no reason why similar methods should not be used in a much larger district. In order that the work should be carried on in an efficient manner, however, it would be necessary to have the district subdivided into a number of small units each of which should be provided with an adequate number of diagnosticians. If such an arrangement seems advisable the Commission must receive financial support from the public, for it has no funds to draw upon beyond what it obtains from voluntary contributions.

REFERENCES.

- ¹Amoss and Chesney: *Jour. Exp. Med.*, 1917, Vol. xxv, p. 580.
- ²Zincher: *Jour. A. M. A.*, 1917, Vol. lxviii, p. 817.
- ³Draper: *Jour. A. M. A.*, 1917, Vol. lxviii, p. 1153.

AN ESKIMO "DEFICIENCY DISEASE."

By JOHN M. LITTLE, JR., M.D., ST. ANTHONY,
NEWFOUNDLAND.

It is only recently that the importance of diet deficiency as the cause of certain diseases has been recognized. Experimental work has supplemented clinical deductions until now well defined hypotheses are available to explain certain diseases. As a result of experiments upon animals, clinical observation among humans and chemical research, it has been found that previously unsuspected constituents are necessary in a diet. The nature of these substances is not yet known but some of their characteristics are coming to light.

One substance, or group of substances, water soluble, seems to be found only in natural foods and is necessary to prevent polyneuritis or beriberi. Another substance or group seems associated with certain fats. It would be interesting to have clinical confirmation of the production of disease among humans by the absence of the fat soluble group.

It is not generally known how the Eskimos get the needed elements of diet outside of meat. What do they eat besides seals, caribou, birds and fish? Berries are very abundant in their proper season and keep well frozen. Otherwise, and when civilized food is not available, they depend for carbohydrates upon those already transformed and in the blood, or on the already partly digested stomach contents of animals killed. The great feast of the Eskimo after killing caribou is a thick soup made of its

stomach contents and blood. They go first for what the body craves. In winter the Eskimo follows the caribou herds probably partly for the predigested vegetable matter found in the stomachs. The mosses, grasses and young shoots and leaves have been transformed by the animals' harder digestion into forms assimilable by human beings, and supply the needed vitamins.

As disease comes from diet deficiency or faults in diet, one would certainly expect to find it among the Eskimos, and it is so found. Their susceptibility to scurvy is well known. Their tendency to hemorrhagic conditions and supuration has been frequently mentioned. But one might expect to find other phenomena among a people whose diet must be so extraordinary and at times limited.

Ten years ago, and before the deficiency diseases were so much in the limelight as now, I described a disease that seemed peculiar to the Eskimo. At that time the cause of beri-beri was not recognized nor had the term "vitamin" been coined. I want to quote from my paper, published in the BOSTON MEDICAL AND SURGICAL JOURNAL, February 20, 1908. I described the disease under the name "kallak," by which it is known to the Eskimos of Labrador and Baffin Land. In a few words, the disease may be described as an endemic disease commencing with an eruption of pustule-like lesions in successive crops on the hands, elbows, buttocks, etc., no organisms being found until secondary infection takes place; intense itching, protracted course and ultimate recovery. I will refer anybody to the previous article for further description, only quoting verbatim as follows:

"The only facts that seem to have a bearing etiologically are that, while it may occur at any time of the year, if they have plenty of seal flesh to eat, they don't have kallak. Most of the cases, as well as the worst cases, and the epidemics, occur in the autumn after they have been living almost exclusively on a fish diet, and especially after a failure of the berry crops."

"I believe it to be a symptomatic reaction to some toxin elaborated on account of the Eskimo diet."

"... found the best treatment to be the addition of seal meat and berries to the diet."

It would seem that we have here a disease in the human, due possibly to the absence of the fat soluble substance or group of vitamins previously mentioned. That the Eskimos have scurvy or beri-beri, on diets productive of those diseases, is well known. That there is a third deficiency disease to which they succumb, when they don't get the proper fats from seals or caribou, seems probable.

In my previous paper on kallak I said that this disease is "... not acquired by children or adults of the white races who are brought into contact with it." Since writing the above, I have talked with an intelligent young Scots-

man who, wrecked on a whaler in Baffin Land, lived a year with the Eskimos and lived the Eskimo life. He gave me a good description of kallak, said he had it and almost died. This suggests that the disease is not peculiar to the Eskimos, but to their conditions of living.

Book Reviews.

Military Surgery. By DUNLAP PEARCE PENHALLOW, S.B., M.D. (Harv.), Chief Surgeon, American Women's War Hospital, Paignton, England; Captain Medical Corps, Massachusetts National Guard; First Lieutenant, Medical Reserve Corps, U. S. Army (Inactive List); Director of Unit, American Red Cross European Relief Expedition. With introduction by SIR ALFRED KEOGH, K.C.B., Director-General, Army Medical Service. Original drawings by the author. London: Henry Frowde, and Hodder & Stoughton. 1916.

An interesting volume by a young Boston surgeon who has been stationed in England for a considerable portion of this war. The energy and industry necessary to produce a volume of this character is much to be praised when one considers that the routine duties of a surgeon in charge of a war hospital usually consume every atom of his time and attention. The book contains a short and complimentary introduction by Sir Alfred Keogh, K.C.B., Director-General, Army Medical Service. It is well illustrated by half tones of actual cases, and x-rays. It is an excellent consideration of military surgery as seen from a base hospital. We should have welcomed a more extensive description and discussion of the Carrel method of disinfecting septic wounds. As a brief, concise manual of war surgery, based upon personal observations made near the front, the book deserves careful reading by all interested in the subject.

Diseases of the Digestive Tract and Their Treatment. By A. EVERETT AUSTIN, M.D. St. Louis: C. M. Mosby Company. 1916.

Dr. Austin has written a considerable volume of over 500 pages. His style is personal, pleasant and fluent. He gives his own views, which in some cases, however, may not be generally accepted. He warns us in the preface that it is not his intent to make an encyclopedia of this book. He is not willing to lay the stress upon x-ray examinations that many clinicians do at present. In general, he relies upon and describes only a few of the simpler tests for diagnosis in gastro-intestinal conditions. Even if one does not get an exhaustive discussion of gastro-intestinal diseases, one finds in this book a simple, straightforward presentation of the views of a man with wide experience.

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WAR OBLIGATIONS.

EVERY physician in the country wants to do his bit in assisting to preserve the Nation in this time of stress. How can he do it? Many can enlist in the medical services of the Army or the Navy, others can help organize base hospitals, and learn how this should be done. Those who are connected with medical schools will give up their vacations and conduct intensive courses of instruction with a view to shortening the curriculum for the graduating classes, while some of the members of the profession who have passed the age limit for active service can assist by urging suitable men to enlist and by helping in the work of organizing the efforts of the profession so that they may count for the most, thereby avoiding many of the mistakes that were made in England in the fall of 1914. Already the Medical Section of the Council of National Defense has organ-

ized auxiliary committees in the various states, it has listed the available physicians under forty-five years of age, and the hospitals with their staffs and the number of their beds; recently it has secured the coöperation of manufacturers of medical and surgical supplies and equipment in order to obtain an adequate quantity of these needed articles and in order to standardize them, and it has appointed subcommittees throughout the country to consider the needs of the different divisions of medicine and nursing.

At the present time there is a real danger that many committees appointed by states, counties and towns in their desire to help, may interfere with one another and duplicate the work that should be done in an orderly and well-thought-out manner. The Council of National Defense, created by act of Congress, has been hard at work since last September, holding almost daily sessions. It has an able Medical Section, and fewer mistakes are likely to be made if we put ourselves at its service and help to carry out its plans.

A NEW PUBLICATION.

INTEREST in literary and historical matters bearing on medicine has been a constant and growing incentive to scientific study into the records of the past by medical men for some time. Concrete expression has been given thereto by the organization of historical clubs in the great medical centers like Baltimore, Boston, Chicago, St. Louis, Washington and Philadelphia and the recent establishment of a historical section by the New York Academy of Medicine. Desultory papers published in different medical journals and occasional monographs have given a slight indication of the large amount of invaluable work being done. Aside from the publications of these historical societies there is, however, no periodical in the English language devoted solely to the publication in proper form of the researches of the students of medical history. For a long time the leaders in the important branch have felt the need of a medium or organ for the publication of their work. Plan upon plan has been suggested and discarded. As no pecuniary profit was to be expected from such an enterprise, financial difficulties constantly interfered with

the culmination of ideal plans. At last these difficulties were surmounted and in April the new journal, *Annals of Medical History*, made its appearance. The literary side will be well taken care of by the Board of Editors. The typography is under the supervision of Mr. Frederic W. Goudy. It is to be published quarterly,—spring, summer, autumn and winter. It will include original contributions with occasional reprints of epoch-making monographs.

As an indication of its scope the original articles in the first issue are as follows: "The Scientific Position of Girolamo Fracastorio (1478?-1553), with Especial Reference to the Source, Character and Influence of his Theory of Infection," by Charles and Dorothea Singer, Oxford, Eng.; "The Greek Cult of the Dead and the Chthonian Deities in Ancient Medicine," by Fielding H. Garrison, M.D., Washington, D. C.; "Voltaire's Relation to Medicine," by Pearce Bailey, M.D., New York, N. Y.; "Burke and Hare and the Psychology of Murder," by Charles W. Burr, M.D., Philadelphia, Pa.; "Hebrew Prayers for the Sick," by C. D. Spivak, M.D., Denver, Colo.; "Laryngology and Otology in Colonial Times," by Stanton A. Friedberg, M.D., Chicago, Ill.

Except for the special publications of historical societies, the *Annals of Medical History* is the only periodical in English devoted exclusively to the study of medical history. Its subject is one in which physicians are becoming constantly more and more interested. The periodical will be of the highest literary and artistic merit, will contain no advertising, and should find and fill in medical literature a place entirely and definitely its own.

THE MEDICAL SECRETARY AND LABORATORY ASSISTANT.

An experiment which is expected to meet a long-felt need among physicians is being tried at Simmons College, Boston. Several of the young women who are to graduate as secretaries next June are being especially trained along lines that will make them more valuable as secretaries to men in the medical profession. In addition to the training of the regular four-years' course, which consists of about three years of academic work and thorough training

in stenography, typewriting, filing, cataloguing, bookkeeping, etc., this group is receiving additional instruction in stenography, with special reference to medical terms, and in translating and abstracting medical German; they are also being trained to do the routine chemical analysis of urine, as well as the microscopic analyses of blood and sputum.

This mental and technical training for a woman who has the proper personality for meeting patients is the first step in recognition of the fact that the modern physician needs a secretary equipped to meet his special demands.

It must be admitted that these requirements vary so with different physicians that no one person can be trained in college to become proficient in all of them, but it is reasonable to expect that the young woman with a definite aim and this kind of preparation will offer a combination of accomplishments much superior to those of the secretary at present available.

For positions which are concerned chiefly with laboratory work, other young women are being trained. The larger hospitals are employing in their laboratories, as assistants, college graduates who have spent a large part of their four years in the study of chemistry and biology, but the smaller hospitals and individual physicians have been unable to afford assistants for this work alone. Therefore Simmons College is adding a certain amount of secretarial training to the preparation which formerly has been given to its graduates in science, in the hope of meeting the demand for a combined analyst and secretary.

There is undoubtedly a field for students with either type of preparation, although they are so different in their emphasis; the one, the trained secretary who may do in addition abstracting and routine analyses; the other, the laboratory assistant who may also assume the simpler duties of a secretary. But these attempts which are being made to assist men of the medical profession will be useless unless they meet with the hearty coöperation of the physicians.

TWO IMPORTANT LETTERS.

THE ATTENTION OF MEMBERS OF THE MASSACHUSETTS MEDICAL SOCIETY IS PARTICULARLY DIRECTED TO two important letters published in

the correspondence column of the present issue of the JOURNAL. The first, by Dr. Walter P. Bowers, chairman of the Massachusetts State Board of Registration in Medicine, explains most effectively the purport of the new medical registration law in this Commonwealth, which has been unjustly criticized owing to ignorance of its intent. The second letter, by Dr. Arthur N. Broughton, chairman of the Committee of the Massachusetts Medical Society on Workingmen's Compensation, announces the successful passage, without the Governor's signature, of the amendment to the Workingmen's Compensation Act advocated by this committee. In this connection, and in general regard to medical legislation, especial commendation is due to Dr. Hart, Dr. Johnson, and Dr. Frothingham for the very efficient work they have done on the Committee on Public Health of the Massachusetts Legislature.

CENSORS' EXAMINATIONS.

THE attention of members of the Massachusetts Medical Society, AND OF THOSE WHO DESIRE TO BECOME MEMBERS, is also directed to the notices of impending Censors' Examinations of the Essex South, Norfolk, and Suffolk District Societies, which are published on the last page of the present issue of the JOURNAL. At no time can a physician most effectively serve his community and his profession, unless he is an accredited member of his official state medical organization. Especially in the present national emergency, when an imperative and additional call to service of country is made upon every physician in the United States, is it the duty of all possessing the needed qualifications in our Commonwealth, to enroll themselves, by examination in their respective districts, in the Society upon whose organization must be based the mobilization of the medical personnel of Massachusetts.

MOBILIZATION OF THE MEDICAL PERSONNEL OF MASSACHUSETTS.

THE members of Sub-Committee No. 1, on Mobilization of the Medical Personnel of Massachusetts, are very much gratified at the manner in which the physicians are sending voluntary contributions to defray the expense of the State cataloguing of physicians. It is impos-

sible to make a personal acknowledgment to each one that contributes, and the Committee therefore desires to acknowledge most gratefully, through THE BOSTON MEDICAL AND SURGICAL JOURNAL, the generosity of the physicians who have not only filled out the cards promptly, but have also given substantial donations towards the necessary expense of this very valuable piece of work. The cards are being returned with commendable promptness, and it is earnestly hoped that every single doctor in Massachusetts will fill out his card and return it, whether or not he finds it convenient to enclose a subscription.

MEDICAL NOTES.

BLINDNESS IN THE UNITED STATES.—The Bureau of the Census, Washington, D. C., has issued a bulletin referring to statistics of blindness in the United States. It states that the forthcoming report on the blind in the United States, announced by Director Sam L. Rogers, of the Bureau of the Census, Department of Commerce, indicates that 30.8%, or somewhat less than one-third, of the blind population lost their sight when less than 20 years of age (including those born blind); 47.4%, or somewhat less than one-half, during the early or middle years of adult life (from 20 to 64 years); and 21.8%, or a little over one-fifth, in old age (after passing their sixty-fifth year). More persons were reported as having lost their sight when less than 5 years of age than in any other 5-year period of life, 16.4%, or about one-sixth, of the total being included in this group; persons reported as born blind formed 6.6% of the total, and persons reported as losing sight when less than 1 year old, 5%, these two groups together contributing 11.6%, or more than one-tenth, of those reporting the age when vision was lost.

These statistics are based on an enumeration of the blind made in connection with the census of 1910. The blind population enumerated was 57,272, and by sending out special schedules through the mails the Bureau obtained data regarding such subjects as the cause of the blindness and the age when it occurred from 29,242 blind persons.

The fact that the 30,000 blind represented in the returns had on the average been blind for 16 years makes plain the gravity of this misfortune. Although the risk of blindness in infancy, childhood or youth is relatively small, yet, as shown by these figures, the complete elimination of that risk would reduce the blind population by nearly one-third. Similarly, the elimination of the risk of blindness during the early or middle years of adult life would reduce the blind population by nearly one-half, while

the elimination of the high risk in old age would cause a reduction of only one-fifth in the number of existing cases. Of course, the earlier the age at which the sight is lost, the greater the magnitude of the misfortune; loss of sight in infancy means a life of blindness, while loss of sight in old age ordinarily means only a few years of that affliction. For this reason the increase in individual happiness and the benefits to society in general that would accrue from a successful campaign against blindness in early life would obviously be vastly greater than would result from a corresponding reduction in the blindness occurring in old age. In this connection it is significant that since 1880 there has been a distinct decrease in the proportion of blind who lost their sight in infancy. In 1880 persons who became blind before completing their first year of life formed 15.3% of the total reporting, as compared with only 11.6% in 1910. This decrease is explained largely by the great progress made toward preventing blindness among newborn infants through the use of the Cr  d   method of prophylaxis for ophthalmia neonatorum, which was discovered in 1884.

REQUESTS IN THE INTEREST OF NEUROLOGY.—By the will of the late James Buchanan Brady, the New York Hospital is the recipient of a gift of \$4,000,000 to establish a department of neurology, and Johns Hopkins Hospital, Baltimore, is the recipient of a gift of \$300,000 to be used in the erection of the James Buchanan Brady Neurological Institute.

WAR NOTES.

CORNELL AMBULANCE UNIT.—A third unit for ambulance service has been equipped by Cornell men and will be sent to France in June.

RED CROSS SUPPORT.—President Wilson, in a letter sent to the Washington branch of the American Red Cross, urges that all relief work be concentrated and co  rdinated under the organization of the Red Cross, that it thereby may be made more thoroughly efficient. He states to all who are anxious to aid in relief work that: "Having been made the official volunteer aid organization of the United States, the American Red Cross comes under the protection of the Treaty of Geneva and has received due recognition from all foreign governments. Its status, both at home and abroad, is thus definitely determined and assured."

"Recent experience has made it more clear than ever that a multiplicity of relief agencies tends to bring about confusion, duplication, delay and waste. Moreover, it affords temptations to dishonest persons to take advantage of the general willingness of the public to subscribe to such agencies to defraud subscribers and rob the soldier of the assistance he so much needs. Wherever in the present war sufficient volunteer aid has been rendered, either to soldiers or to non-combatants, it has been rendered under a well organized central body. Experience is cer-

tainly the most convincing teacher, and we should learn by these European examples how to conduct our own relief work with the most thorough efficiency and system. With its catholicity and its democracy, the Red Cross is broad enough to embrace all efforts for the relief of our soldiers and our sailors, the care of their families, and for the assistance of any other non-combatants who may require aid.

"As the president of the American Red Cross, our branch of the great international organization, I most earnestly commend it to your confidence and your support. Upon your aid, upon the amounts and promptness of your gifts and co  peration must depend the fulfillment of the duties that are imposed upon it. It serves so noble and beneficent a purpose that it must appeal to all who love their country and all who love humanity."

Miss Margaret Wilson, the President's daughter, has given to the Red Cross the sum of one thousand dollars, the proceeds of her spring concert tour.

RED CROSS SUPPLY SERVICE.—A new organization designated as the Red Cross Supply Service has been formed as a bureau of the American Red Cross. Its functions will be to distribute among American soldiers and military hospitals gifts and supplies from patriotic individuals and relief societies throughout the country. Headquarters of the new service will be in Washington, with branches to supervise the collection and preparation of supplies at New York, Boston, Chicago, Denver, New Orleans, and San Francisco. The central office at Washington, it is announced, will be in close association with the war and navy departments and the Council of National Defence, and will be under the direction of W. Frank Persons, former director of the Charity Organization Society of New York. The director of the Boston branch will be Henry S. Dennison.

Local committees will be associated with the directors of the branch headquarters, and warehouse space has been arranged for at each place.

The work of smaller towns and cities will be directed from the branch headquarters. Agents of the service will be located in every training camp, military and naval hospital and army base. Through co  peration with relief societies and systematic methods of purchase and distribution, it is expected that much waste will be eliminated and overproduction of certain articles avoided.

WAR RELIEF FUNDS.—On April 29 the totals of the principal New England war relief funds reached the following amounts:

Belgian Fund	\$578,768.43
French Wounded Fund	220,742.75
Armenian Fund	177,838.33
Serbian Fund	115,240.49
French Orphanage Fund	95,525.26
British Imperial Fund	93,642.88

Surgical Dressings Fund	\$2,947.47
Boston Ambulance Fund	76,327.33
Metropolitan Red Cross Fund ...	55,740.13
French Phthisis Fund	13,738.04

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday, April 21, 1917, the number of deaths reported was 258, against 265 last year, with a rate of 17.42, against 18.17 last year. There were 37 deaths under one year of age, against 29 last year, and 91 over 60 years of age, against 100 last year.

The number of cases of principal reportable diseases were: diphtheria, 89; scarlet fever, 41; measles, 216; whooping cough, 7; typhoid fever, 6; tuberculosis, 53.

Included in the above were the following cases of non-residents: diphtheria, 17; scarlet fever, 14; measles, 1; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 1; scarlet fever, 1; measles, 1; tuberculosis, 22.

Included in the above were the following deaths of non-residents: diphtheria, 1; measles, 1; tuberculosis, 1.

SYPHILIS IN MASSACHUSETTS.—The State Department of Health, in its February Bulletin, reports as follows of its work in the prevention and suppression of syphilis.

"Since the establishment of the Wassermann Laboratory by the State Department of Health in June, 1915, some 37,000 tests have been made, affording a fair sampling of the population as a whole. Five per cent. of these tests have been positive. This represents at least 850 syphilitics. If this sampling is representative of the population of the State, many thousands of cases of this disease are constantly present among the inhabitants. Many students of the subject consider this rate too low.

"As a cause of suffering, sickness and death, syphilis undoubtedly ranks next to lobar pneumonia and tuberculosis, the two latter being responsible for about 6,000 and 4,000 deaths annually, respectively.

"In any event, it is evident that this disease constitutes an exceedingly important health problem. Because the reporting of such cases is notoriously incomplete in states where it has been attempted, and of doubtful value at the present time, syphilis has not yet been placed on the list of diseases to be reported.

"To aid in meeting the first of these difficulties the State Department of Health, as already indicated, has established a Wassermann Laboratory for furnishing free diagnosis. For some time specimens have been examined at the rate of 25,000 annually.

"To meet the second great difficulty,—the problem of obtaining an effective and trustworthy remedy for its treatment,—the State Department of Health has devoted much time and

effort. The necessity for this undertaking was recognized by the Legislature when it appropriated funds for this purpose in 1915, since the present war and consequent interference with trade had rendered specific remedies manufactured abroad practically unobtainable.

"After much difficulty the Department has finally succeeded in producing a specific remedy—an organic derivative of arsenic—which tests have shown to be less toxic than other preparations for the same purpose.

"The next step is to provide for the manufacture of the remedy on a commercial scale sufficient to supply the demands for the citizens of the Commonwealth. The Department hopes, later in the year, to announce its readiness to supply the remedy on such a scale."

ENDURANCE OF POLIOMYELITIS GERM.—In the report of investigations of the Rockefeller Institute, published in the April number of *The Journal of Experimental Medicine*, Dr. Flexner called attention to the extraordinary power of life the poliomyelitis organism possesses, and reports experiments with virus which had been preserved for six years in a 50 per cent. solution of the weak disinfectant glycerol at a temperature of about 4 degrees centigrade. With this preserved virus poliomyelitis was produced in monkeys.

NEW ENGLAND NOTES.

NEW HAMPSHIRE.—The auxiliary committees of the New Hampshire State Committee for Medical Defense, which is a branch of the Association of American Physicians for American Defense, and of which Dr. John M. Gile of Hanover is chairman, are meeting to organize and lay plans for action. The Grafton County branch, of which Dr. Percy Bartlett of Hanover is chairman and Dr. Daniel R. Chase of Lebanon, secretary, met on April 5 at Woodsville to outline a campaign for action. Physicians and surgeons of Rockingham county met in Portsmouth on April 5, and passed two resolutions: one stating the willingness of all members to perform whatever duties they were called upon to do as members of the reserve corps, and the second, that they would attend to the families of any enlisted men when care was needed. At the meeting of the Hillsborough county branch in Manchester, April 3, Dr. A. W. Shea, of Nashua, was elected chairman and Dr. George S. Foster of Manchester, secretary. Other members of this group include Dr. H. L. Smith of Nashua, Dr. David W. Parker of Manchester, and Dr. J. Franklin Robinson of Manchester. Dr. Thomas J. Dougherty of Somersworth has been elected chairman, and Dr. Louis W. Flanders of Dover, secretary, of the Strafford County branch.

Dr. J. C. B. Charest, of Derry, has proposed the recruiting of a French regiment of 1,000 men in New Hampshire.

Harvard Medical School.

SUMMER INSTRUCTION TO THE THIRD YEAR CLASS.—The following letter concerning the proposed summer instruction to the third year class has been sent to all members of that class in the Harvard Medical School. The purpose of this projected instruction is to expedite the graduation of physicians from school to take the place of others as house officers, in laboratories, and in practice, who may thus be released for service to their country in the war.

"In order to comply with the expressed wishes of the students of the third year class and of the government, instruction equivalent to that provided for the fourth year students will start on June 4th and be continued throughout the coming summer. Although it is optional with the student whether he will begin on June 4th or on September 24th, when the next regular academic year commences, each student is strongly urged to undertake the summer work in order that he may be prepared as soon as possible to do his part in military preparedness. It is confidently stated by the government that medical students will be of the greatest help to the nation after the completion of their medical course, and it is the earnest desire of the government that medical students devote all their energies toward qualifying themselves as soon as possible by graduation from their respective medical schools.

The Dean's Office will be glad to assist students in so far as possible in arranging any financial or personal matters upon which their availability for summer work depends.

The arrangements for summer instruction are, so far as developed at the present time, as follows:

1. Instruction equivalent to that at present provided for the fourth year students shall be offered during the summer of 1917.

2. Such instruction shall be open to any member in good standing in the present third year class who registers for this work on or before May 1st.

3. The regular tuition fees shall be collected for this work. The first instalment of the tuition fee (\$135) will be due on July 9; the second instalment (\$90) on September 24. Students who, for sufficient reason, will be unable to pay the first instalment of their fee on or before July 9, may obtain an extension of time (not beyond September 24) by making application in writing to the Bursar and filing it promptly at the Dean's Office, accompanied by a full statement of the circumstances which lead to the request.

4. Such summer instruction shall begin on June 4 and continue uninterruptedly, with the exception of July 4, up to and including September 23. From August 19 to September 3, there shall be a vacation period. On September

24, the regular academic year shall begin again and continue up to mid-year with the regular vacation periods. At mid-year examinations shall be held for students who have completed satisfactorily the above course, and to those who pass the examinations the M.D. degree shall be awarded.

5. Regular attendance shall be required of all students who register for summer work at the assigned exercises, in order that such work may count toward the degree of M.D.

6. To all students whose work during their three years' course has been of high standard, and whose work during the summer of 1917 is equally creditable, the privilege will be granted of applying for medical service in the United States Army and Navy Service, in case these services desire such men for hospital service or further training in the Army and Navy medical schools. This work, if of four or more months' duration, and creditably done, shall count in place of the second half-term of fourth year work, and on its completion such men will be allowed to take their final examinations for the degree of M.D. To such of these students as are commissioned as officers in the regular Army and Navy Medical Service after a satisfactorily completed course in the Army or Navy Medical School, the degree of M.D. shall be granted without further examination.

7. For all such students as signify their intention of applying for the Army or Navy medical service, as outlined above under 6, arrangement will be made for them to be so assigned as to receive, during the summer, one month's instruction in pediatrics, one month's instruction in obstetrics, one month's instruction in the various specialties, and one month in medicine or surgery. For all others the course will be given essentially as already arranged for the fourth year.

8. Further details will be announced at a later date."

E. H. BRADFORD, *Dean.*

Obituary.

CHARLES F. DENNY, M.D.

DR. CHARLES F. DENNY of St. Paul, Minn., died on March 24 of cardiac disease, in his 60th year, at Los Angeles, Calif.

His early education was obtained in Newburyport, Mass. He took the course at the Massachusetts College of Pharmacy, but later entered the Harvard Medical School and graduated in 1882, after which he removed permanently to St. Paul, where he practised until January, 1917. His health had failed considerably during the past year, and to escape the severity of the winter he went to California, where he rapidly grew worse and died in the hospital.

Dr. Denny retained his membership for some time in the Massachusetts Medical Society. He was a member of the Minnesota State Medical Society, and had been on the staff of two of the St. Paul hospitals, but recently resigned from one. He made a specialty of abdominal surgery, and was a contributor to the *Northwestern Lancet* and the *BOSTON MEDICAL AND SURGICAL JOURNAL*.

He never married.

Correspondence.

REGISTRATION OF PHYSICIANS.

Boston, April 25, 1917.

Mr. Editor:

CHAPTER 55 of the General Acts of 1917 was enacted by the Legislature March 10, 1917, and is an amendment to the law regulating the registration of physicians. This amendment has been somewhat violently criticized by many physicians. One may infer from these criticisms that the Act has not been generally read because much of the criticism has shown imperfect knowledge of its text and purposes.

The Board of Registration in Medicine has a limited number of reprints of the Act, which it will furnish on application.

President Woodward of the Massachusetts Medical Society has suggested that some explanation of the new law appear in your columns.

It should first be borne in mind that there is nothing in this Act which has not already been adopted and approved in other states.

The original draft of the bill was submitted to the Committee on State and National Legislation of the Massachusetts Medical Society, and was approved.

The first provision in the amendment relates to medical study, and provides that applicants for registration must be graduates of medical schools which give a full four-years' course of instruction of not less than thirty-six weeks in each year.

The next change provides that the Board of Registration in Medicine may cancel the registration of physicians, for a limited period not exceeding one year, who have been guilty of gross and confirmed use of alcohol in any of its forms while engaged in the practice of medicine, or the use of narcotic drugs in any way other than for therapeutic purposes, or who have published, or caused to be published, or distributed or caused to be distributed any literature contrary to the provisions of Chapter 386 of the Acts of the year 1908, or who have acted as principal or assistant in carrying on the practice of medicine by an unregistered person; and then goes on to provide punishment for fraud attempted or committed in connection with securing registration, and also for fraud attempted or committed in connection with the practice of medicine.

These features of the amendment no one has criticized, so far as I know, because all reputable men believe in putting into the law provisions which may deal with crime and dishonesty; but when this Act, in Section 3, requires the doctor to make a journey to his city or town clerk and pay a fee of twenty-five cents, many doctors have felt very much disturbed. This provision is not for annual registration, and will not have to be repeated unless a physician opens an office in another locality.

There are several good reasons for this registration. For instance, this State borders on New Hampshire, Vermont, New York, Connecticut and Rhode Island. Doctors who are registered in these states can practise in border towns in this State

without being registered here, and have, in some instances, abused this privilege by going beyond the border towns. This Act enables one to follow the practice of these men, and may have to be followed by other legislation to bring medical practice in these border towns up to some recognized average quality.

Again, a considerable number of physicians from other states spend their vacations in Massachusetts, and while here practise their profession.

Under this amendment, city and town clerks now know more about the medical registration law, and local officials will be more interested in enforcing it. An official in Berkshire County, or on the Cape, can now go to the city or town clerk and at once ascertain whether a man is legally entitled to practise in this State. It may not occur to him to write to Boston for the information.

Again, an unlicensed travelling doctor could formerly work in Worcester until driven out, then go to Lynn, or some other city, and again move on when it became necessary. He could often do enough business so that, like some illegal saloon keepers, he could afford to pay the usual fine, and have money enough left to pay him for his time. Under the amendment he may be apprehended as soon as registered in a new place.

Again, leaving the irregulars out of consideration, information is often sought relative to the last place of practice of a physician. Directories are not up to date. This recording, after being put into operation, will give more certain, up-to-date information. It often happens that after a recent graduate is authorized to practise, more than a year has elapsed before his name appears in a directory, and some person may want to know where he may be reached. One might go on with other reasons for knowing the location of any given person.

Several physicians have bitterly denounced this law and also all who endorsed it. If this attitude is taken by any great number, the law ought to be repealed, because it is useless to have a law which is not respected, even though it may be of value to certain officials. If the majority of the profession is unwilling to make the personal sacrifice involved in meeting the provisions of this law (one trip to the office of his city or town clerk, and the disbursement of twenty-five cents), or if they feel doubtful of the purpose and methods of those who are trying to put power into the law and develop a higher average of medical efficiency (which can come about only by eliminating the unworthy), then those objectors should definitely and positively make their positions clear. They should try to eliminate from active influence those in whom they have no confidence, and then constructively deal with the laws.

If Massachusetts is to take a position among the other states, regulating and standardizing medical study and practice, some persons must be willing to do the disagreeable work involved in formulating and securing legislative action.

Recent criticism of the physicians in the Legislature, who have worked very hard for medical legislation, has led these gentlemen to feel that the profession has neither supported nor appreciated the quality and quantity of effort expended.

Dr. Hart and his associates are entitled to everlasting gratitude for dealing patiently and successfully with many trying situations. They should be congratulated, and not scolded.

Respectfully, WALTER P. BOWERS.

AMENDMENT TO THE WORKINGMEN'S COMPENSATION ACT.

Mr. Editor:

At midnight of April 23 the bill to amend the Workingmen's Compensation Act, introduced by the Massachusetts Medical and Homeopathic Medical Societies,

became a law, and without the Governor's signature. The final form in which the law was passed is as follows:

Chapter seven hundred and fifty-one of the acts of the year nineteen hundred and eleven, as amended by section one of chapter seven hundred and fourteen, is hereby amended by striking out section five of Part II as amended and inserting in place thereof the following new section:— *Section 5.* During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the board, for a longer period, the association shall furnish adequate and reasonable medical and hospital services, and medicines, when they are needed. The employee shall have the right to select a physician other than the one provided by the association and in the event that he shall be treated by a physician of his own selection, or where, in case of emergency or other justifiable cause, a physician other than the one provided by the association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the association, subject to the approval of the Industrial Accident Board. Such approval shall be granted only if the board finds that the employee was so treated by such physician, or that there was such emergency or justifiable cause, and, in all cases, that the services were adequate and reasonable and the charges reasonable.

The passage of this law marks one stage in the fight to correct the injustice and ineffectiveness of the Workmen's Compensation Act as it stood for four years. The principles involved concern not only the physicians throughout the state, but every workman, every employer of labor, and very many large insurance companies. The passage of the amendment through the legislature was of great interest. The only open opposition to the bill was of some large interests in Worcester and in Boston. In contrast to this the bill had the support not only of the medical societies but of all the various labor organizations, and very many employers. The Chairman of the Industrial Accident Board stated at the hearing that the doctors were entitled to relief. The insurance companies offered no open opposition. The bill had a unanimous report from the Joint Judiciary Committee. It went through the three readings of the House with no apparent opposition, and it was not until the third reading in the Senate that any marked attempt was made to defeat the bill. In this instance, the opposition was originated almost entirely at a single source. That same opposition was met when the bill was finally given to the Governor for his signature. It is a matter of regret that the bill had to become law, as it did, without the signature of the Governor. It is not clear how a bill which had the support of all the physicians, of all the workmen, of many employers, and with so little open opposition, could have failed to have the support of the Governor.

The law as it now stands is not perfect, but it is a marked improvement actually for all concerned, compared with the law as it stood. The chief beneficiaries under it will unquestionably be the workmen; but the entire economic situation we believe will be improved by compelling good medical service to be rendered in the case of accident, however and wherever it is furnished.

Two important duties now lie before the physicians of the state: In the first instance, it is imperative that the profession as a whole emphasize the sincerity of their contentions by the most scrupulous care in their conduct of all industrial cases, both in their medical

and financial relations to the case. One of the greatest dangers to be encountered would be the unfair exploitation of the law in securing undeserved remuneration or in any way becoming objects of deserved criticism at the hands of those who must administer the law. The second duty, also of great importance, is the recognition of the fact that already a powerful opposition is being organized to attack the law and repeal it or seriously cripple it at the next session of the legislature. The profession throughout the state must continue their defence of the justice of the law as it now stands and cooperate in protecting it. It would be a great discouragement to the committees of the two societies that have worked so hard to bring this change about, to have its work all undone either by a lack of continuous and aggressive cooperation on the part of the profession or disloyalty in the performance of its duties under the law, to those principles of honesty and fairness which in reality are the fundamentals of the ethics of the practice of medicine. To justify the work on behalf of this new act we must work together and in the spirit of fair play in which the amendment to the Compensation Act was drawn.

ARTHUR N. BROUGHTON, *Chairman.*

THE TREATMENT OF STAMMERING.

Los Angeles, Calif., April 3, 1917.

Mr. Editor:

Although the article in the December 7th, 1916, number of the JOURNAL, entitled "An Outline of the Elements and Treatment of Stammering," embraces the generally recognized views of the subject, it does not include a recent view, of which every one interested should take cognizance. Since these views are advanced, and to a considerable extent elucidated, by Dr. Albert Liebmam of Berlin, a world authority, no discussion of the subject is complete without them, especially as they are revolutionary as far as the treatment is concerned. If Dr. Liebmam is right, the current treatments are diametrically wrong and really intensify the impediment, notwithstanding the temporary improvement due to the calming environment of the cure. These views are given and supported in "Die psychische Behandlung von Sprachstörungen" by Dr. Albert Liebmam, published by Oscar Coblentz, Berlin, 1914.

Briefly and comprehensively, the latest information is about as follows:

(1) The stammerer has first progressed so far in the acquisition of speech that he talks automatically. It does not necessarily follow that his vocabulary is large; but what he does say he says automatically.

(2) The inducing causes are entirely accidental or incidental, and not due to any defect whatever of the individual. They may all be classified under the head of a temporary speech interruption. For instance, imitation stammering is voluntary temporary speech interruption; aphasia is a temporary speech interruption; so is the broken speech induced by shock, fright, fainting, etc. This unification of the causes of stammering is alone an interesting indication of the reliability of the new views. None of the old views could account for the origin of one disorder from totally dissimilar causes. Even the astute Professor John Madison Fletcher writes as recently as 1914, "Just how being bitten by a dog can produce stuttering in the same fashion in which habits are acquired is not easy to see; . . ." But it is easy to see in the present light on the subject.

(3) When normal speech is interrupted the speaker makes a conscious effort to overcome the interruption; but since speech is automatic, and not consciously directed, except to start, stop, and inflect it, the effort is misdirected, and normal speech is blocked by this misdirected effort. It is remarkable that, although practically all of the recognized au-

thorities have observed and recorded these misdirected efforts, Dr. Liebmann seems to be the only one who has properly interpreted them. Pages could be filled with these observations. For instance, Kussmaul says, "He presses his lips, or his tongue and his teeth, or his tongue and his palate, more firmly together than is necessary." Let any one press his lips tightly together and see how much he can talk.

(4) The obstruction to speech caused by the misdirected effort causes a mistaken idea of speech disability. Rudolf Denhardt fully demonstrated the mistakenness of that idea many years ago. The stammering Mr. Jones demonstrates it, when, after struggling violently to say his name, he relaxes and says, "I cannot say Jones." To overcome the imaginary difficulty, the stammerer continues his conscious speech efforts, and thereby makes the real difficulty. In other words, stammering is a complex habit, involving a mental and a muscular element. The mental element is the fear of inability to say a certain sound, and the muscular element is the misdirected effort to overcome that inability. Dr. Frank A. Bryant wonderfully confirms this view in his statement, "... a spasm habit is formed, chiefly mental, but in some degree and in a connecting manner, physical, which as often as it is repeated, is made stronger, so if mental aberrations be absent, a muscular habit remains." This statement was published before Dr. Liebmann's booklet, and, except for the old, exploded idea of mental aberrations—the ancients thought the stammerer was insane—it is a remarkably clear description of the facts.

(5) The correction of stammering rests on two principles, namely, the restraint of the spasmodic effort, and the cultivation of automatic speech—not of conscious speech of any kind, such as accented vowel, gradual start, continuity, or any of the artificial means almost universally practised; because any conscious effort intensifies the original trouble.

Many corollaries follow these propositions, but the most important one is that the disorder may be extirpated when parents and teachers are induced to prohibit stammering at or near its inception. Schools should substitute written recitations for oral ones for the stammerers, and stammering should be prohibited on school property. In reality this is required by law, for there are laws against the spread of contagious disorders in schools. However, public sentiment is necessary for the enforcement of any law; and as long as all the sentiment on the subject of stammering originates with those who profit by the continuance of the disorder, there will not be an appreciable move to have it stamped out in the schools; except, of course, by the employment of special teachers—a wholly unnecessary and unjustified course.

Yours sincerely,

ERNEST TOMPKINS.

SOCIETY NOTICES.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY CENSORS' EXAMINATION.—The Censors of the Essex South District will meet at the Salem Hospital, Thursday, May 10, 1917, at 3.30 p.m., for the examination of candidates for admission to the Massachusetts Medical Society.

Members of the Society are requested to inform all eligible non-members of this meeting.

Candidates should apply to the secretary at least three days before the meeting.

HAMLIN P. BENNETT, M.D., *Secretary*.
41 Lewis St., Lynn.

NORFOLK DISTRICT MEDICAL SOCIETY.—The sixty-seventh annual meeting of the Society will be held at Hotel Georgian, 7 Park Square, on May 8, 1917, at 5.30 p.m.

Business meeting:

1. Minutes of previous meeting.
2. Report of committees.
3. Report of Treasurer.
4. Election of officers.
5. Incidental business.

Dinner, 6 p.m. The Entertainment Committee have engaged seats at B. F. Keith's theatre for the evening performance immediately following the dinner. The tickets are for reserved seats in the orchestra and will be distributed during dinner, that members sitting together may be able to do so at the theatre as well.

The Board of Censors will meet for the examination of candidates on Thursday, May 10, at 2 p.m., at the Roxbury Masonic Temple, 171 Warren Street, Roxbury.

The Secretary particularly requests that all who expect to attend the annual dinner will notify him in advance. Dinner tickets may be obtained from the Secretary for one dollar and fifty cents each.

T. F. GREENE, *President*.
BRADFORD KENT, *Secretary*.
795 Blue Hill Ave., Dorchester.

SUFFOLK DISTRICT MEDICAL SOCIETY CENSORS' EXAMINATION.—The Censors of Suffolk District will meet to examine candidates for admission to the Massachusetts Medical Society at the Boston Medical Library on Thursday, May 10, 1917, at 4 p.m. Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the secretary, and present evidence of their graduation from a recognized medical school, at least three days before the examination.

For further particulars apply between 4 and 5 p.m. (except Saturdays and Sundays), to

DAVID CHEEVER, M.D., *Secretary*.
355 Marlborough Street, Boston.

APPOINTMENTS.

DAVID D. BROUGH, M. D., who has been in the health department of the City of Boston for nearly 25 years, has been appointed deputy health commissioner, head of the medical division to succeed the late Dr. Thomas B. Shea.

MARSHALL L. ALLING, M.D., has been appointed to the office of associate medical examiner of the Lowell district in the place of Dr. T. B. Smith who succeeded the late Dr. Joe V. Meigs as medical examiner.

DR. FRANCIS H. SLACK, deputy commissioner of health, will resign from the Boston Health Department on May 1st, to become pathologist at the Sias Laboratory, Brookline. Dr. Slack graduated from Tufts Medical School and entered the service of the city as milk bacteriologist in 1904. He later became director of the laboratory. In 1910 he left the city temporarily to become a professor of bacteriology at the Kansas State Agricultural College, but was recalled about a year later to become secretary of the Board of Health to succeed Charles E. Davis. When the Board of Health was re-organized, Dr. Slack was appointed deputy commissioner in charge of the laboratory. He is secretary of the Massachusetts Association of Boards of Health and is a member of the American Medical Association, the Suffolk District Medical Society, the Boston Society of Medical Improvement, the American Public Health Association and the Society of American Bacteriologists.

MARRIAGES.

HOWARD EBEN GARDNER, M. D., who recently received a commission as assistant surgeon of the reserve force of the United States Navy, with the rank of lieutenant, was married to Miss Maude Paine Badger, of Brockton, on Tuesday, March 27, 1917.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

May 10, 1917

ORIGINAL ARTICLES

THE TREATMENT OF OSTEOMYELITIS. By Channing C. Simmons, M.D., Boston.....	653
PERSONAL EXPERIENCE WITH CARCINOMA OF THE CERVIX. By Lincoln Davis, M.D., Boston.....	660
INTestinal VENOUS STASIS; DIFFUSION OF BACTERIA AND OTHER COLLOIDS. By Fenton B. Turck, M.D., New York City.....	663

REPORTS OF SOCIETIES

NEW ENGLAND PEDIATRIC SOCIETY.....	670
------------------------------------	-----

WORKINGMEN'S COMPENSATION

SPECIAL PAYMENTS UNDER THE WORKINGMEN'S COMPENSATION ACT. By Francis D. Donoghue, M.D., Boston.....	671
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BOOK REVIEWS

Handicrafts for the Handicapped. By Herbert J. Hall, M.D., and Vertice M. C. Buck.....	674
The Diseases of Infancy and Childhood. By L. Emmett Holt, M.D., and John Howland, M.D.....	674

EDITORIALS

TROOP DISEASES.....	675
THE ETIOLOGY OF GOUTY CONDITIONS.....	676
OCCUPATIONS TO BE ENTERED ON DEATH CERTIFICATES.....	677
NOTICE TO PHYSICIANS.....	677
MASSACHUSETTS MEDICAL PERSONNEL.....	677
MEDICAL NOTES.....	677

THE MASSACHUSETTS MEDICAL SOCIETY

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.....	683
--	-----

OBITUARIES

EPHRAIM CUTLER, M.D.....	684
HERBERT B. MCINTOSH, M.D.....	684

CORRESPONDENCE

TOTAL JAUNDICE AMONG MUNITION WORKERS. Francis D. Donoghue, M.D.....	684
THERMOMETER DISINFECTION. Leon S. Medalla.....	685
MEDICAL OFFICERS' RESERVE CORPS. J. R. Blake.....	685

MISCELLANY

NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.....	686
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Original Articles.

THE TREATMENT OF OSTEOMYELITIS.

By CHANNING C. SIMMONS, M.D., BOSTON.

Assistant Visiting Surgeon, Massachusetts General Hospital; Assistant in Surgery, Harvard Medical School.

Two years ago I reported the end-results of 97 consecutive cases of osteomyelitis, 82 of which were of the infectious type, the other 15 being secondary to sepsis, compound fracture, syphilis, etc. Since then I have had opportunity to operate on 58 other cases as follows:

Acute	13
Acute periosteal	1
Bone abscess, less than 1 yr. duration	6
Chronic (bone destruction) less than 1 yr.	6
Old chronic	16
Old bone abscess	4
Secondary	13
Hematoma, etc.	3

I intend to discuss the cases (22) of less than one year's duration only, as this is the period during which the disease can be cured if it is properly treated. It is, unfortunately, often overlooked, especially the mild type, and when recognized, an inadequate operation is done. We have all seen the hospital derelicts with chronic osteomyelitis, who drift from one hospital to another, requiring some sort of an operation once in six or eight months, and it is hard to realize that if these cases had had proper treatment at the outset many would have been cured.

I see no reason to change the conclusions given in a previous paper,¹ namely:

1. In children with pain in a limb and evidence of toxemia, always consider osteomyelitis.
2. Operate early, even if the symptoms are rather vague. If the diagnosis is incorrect, practically no harm is done; while if correct, a great deal of suffering may be avoided.
3. In acute cases, open to the medulla and pack the wound. Prognosis good. The treatment and prognosis varies of necessity somewhat in these early cases, but in general the earlier the operation, the better the prognosis.
4. In cases where bone destruction has taken place, seen less than three months after the onset of the disease; perform subperiosteal resection when possible. Prognosis good.
5. In chronic cases of bone abscess of less than one year's duration, open and pack. Prognosis good.
6. In chronic cases, with bone destruction of less than one year's duration, remove sequestrum and pack. Prognosis good.
7. In old chronic cases, either with bone destruction or of the bone abscess type, remove necrotic areas and drain. Try to obliterate the cavity with flaps of living tissue. If this cannot be done, either use bone wax, pack, or sterilize the cavity; allow it to fill with blood clot, and close without drainage. The prognosis, if the cavity can be obliterated, is fair, otherwise poor.
8. The treatment, when such bones as the pelvis are involved, is unsatisfactory, and the prognosis problematical.
9. When, in old chronic cases, the whole

shaft of a long bone is badly diseased, the possibility of resection of the entire shaft, with bone transplantation, should be considered before amputation is resorted to.

The following classification was adopted, and, while it is not based on the pathology, it is of value as a guide to the treatment to be instituted in a given case. At first glance it seems cumbersome, but in studying the cases they will be found to fall readily into one of the groups.

CLASSIFICATION.

- Acute
 - Central
 - Diffuse
 - Fulminating
 - Ordinary type
 - Local
 - With bone destruction
 - Mild type (bone abscess)
 - Periosteal
 - Epiphysitis
 - "Secondary" (tuberculosis, syphilis, etc.)
- Chronic
 - Central
 - Diffuse
 - 6 to 10 weeks' duration.
 - 3 to 12 months' duration
 - Many years' duration
 - Local (with bone destruction)
 - 6 to 10 weeks' duration
 - 3 to 12 months' duration
 - Many years' duration
 - Local (bone abscess type)
 - To one year duration
 - After one year
 - "Resting" cases
 - Periosteal
 - Epiphysitis
 - "Secondary"

As regards prognosis, the disease may be divided into two main classes,—less than one year's duration and over one year's duration. The time limit—one year—is arbitrary, but is substantially correct. The point is that, after about one year the bone loses its power to regenerate, and if abscesses are opened or sequestra removed, it has not the power to fill in the defect. I believe that any case seen less than one year from the time of onset should be cured by operation, although there are exceptions. This statement does not apply when a flat bone, such as the ilium, is diseased, and is not always applicable to osteomyelitis of the femur or in certain multiple cases. In this series a flat bone was involved only twice—the ilium and the scapula. Both of these cases are now well, but ran a very stormy course. The principle of operation is the same,—open and drain early and do sequestromy as soon as possible.

CASE 122. Osteomyelitis of scapula. Female, 18 years old. Sprained shoulder, "fooling" five days ago. Two days later an attack of pain in the right shoulder, and has been in bed since with chills and fever. *Examination*.—Right shoulder held rigid. Swollen and tender, the tenderness being most marked over the border of the scapula. Temperature, 102; pulse, 120; white count, 20,000. Wassermann and Neisser test negative. The condition was thought for three days to be a Neisser

infection of the shoulder. *Operation* ten days after onset. Large abscess opened about scapula, which was bare of periosteum. *Culture*, staph. albus. Five subsequent operations for pus pockets and the removal of sequestra were necessary and the woman was very sick for some time. A bone abscess of the fibula also developed and was drained. Eighteen months after operation she was well, but the shoulder was stiff.

Osteomyelitis is diffuse or local, that is, the entire shaft of a bone may be destroyed or a portion only. The local form is by far the more common. I believe that in certain cases the infecting organism is so attenuated that the process may heal spontaneously, without bone destruction or even the formation of an abscess. Mild attacks of monarticular rheumatism, or "growing pains" may represent mild infections.

The amount of bone destroyed depends on the virulence of the infecting organism, the resistance of the individual, and to some extent on the portion of the bone involved. The seat of the infection may be in any part of the bone, usually at the epiphyseal end of the diaphysis. It may be under the periosteum, in the cortex, or in the spongy medulla. If in the medulla,—the common seat,—the pus, following the line of least resistance, extends down the canal for a varying distance, destroying the bone, before it breaks through the cortex. After breaking through the cortex, the periosteum is stripped up, until this in turn breaks, and an abscess is formed in the soft parts. If the operation is done early, and the pus given vent before it has extended far in the medullary canal, part of the bone may be saved.

If the organism is of low virulence, the process may become localized in the head of the bone and break through the cortex early, or it may form a chronic abscess with the destruction of very little bone. In these cases the cavity becomes walled off, there may be no discharge of pus, and the symptoms of "rheumatism" gradually subside as the abscess becomes sterile. Later there are recurring attacks of pain, usually following trauma, a cold, or other general infection. The cases in this series show the difference in virulence of infection. Case 115 died in two days of septicaemia (staph. aureus), while in Case 149 (streptococcus) the symptoms were rather mild and of four weeks' duration.

The x-ray is of absolutely no value in acute osteomyelitis, except to exclude scurvy or syphilis. X-rays only show change in density, and until new bone is formed or old destroyed, no variation from the normal is seen. The first changes are usually observed in two or three weeks, and no reliance should be placed on the x-rays before this. After the acute stage is passed, the x-ray is absolutely necessary, and treatment of the bone is practically based entirely on them. They should be taken at frequent intervals, and always interpreted by an

expert in personal consultation with the surgeon, who also should be able to draw some conclusions from them himself.

Treatment. The cases were treated in the routine way, and operated upon as soon as the disease was suspected. A tourniquet was always used, as with it a much better idea of the condition of the bone may be obtained. It is also of value in preventing fat embolism which is seen after bone operations. To my knowledge, I have never seen a case. An incision is carried through the periosteum, and an opening made into the medulla with a burr or trephine. This should always be done, even if there is pus in the soft parts and under the periosteum. If the medulla is diseased, an opening should be made below the first, and still others below this until normal appearing marrow is reached. Never curette, as this spreads the infection and destroys any endosteum remaining alive. The wound is then packed. If the bone dies, a second operation, subperiosteal resection or sequestrotomy, is done in from four to ten weeks, depending on the bone and the rapidity of formation of the involucrum. In the femur and flat bones it is necessary to wait until considerable involucrum has formed, following the changes with the x-ray, but the sequestrum should be removed at the earliest possible moment. Other minor operations for the removal of small sequestra, which have formed later or which have been overlooked, are the rule, but if the case is carefully followed they can be done early and amount to little.

The results of these cases show the value of early treatment. Of the fourteen acute cases, two died at once of septicemia and two have not been traced. Of the remaining nine, prompt operation resulted in cure without bone destruction in three, and the other seven are well from one to two and a half years after the second operation of sequestrotomy or resection. Of the eight cases seen, from one to four months after the onset of the disease, six are well, one has not been traced, and one, a femur, is still draining,—I doubt if he will ever be well.

The bacterium causing osteomyelitis is, of necessity a blood-borne organism, and the disease implies a septicemia. This is now known to be much more common than was formerly supposed. The cultures from the acute cases were as follows:

Staphylococcus albus	1
Staphylococcus aureus	8
Streptococcus	2
Sterile	1
Culture not planted	2

In the case reported as sterile I think the swab must have been allowed to dry, as thick pus was found.

There were two fatal cases, and in these the culture was staph. aureus. It is interesting to note that in the two cases where the culture showed streptococcus (Cases 145, 149) the

symptoms were of a low-grade infection of three and four weeks' duration, respectively.

CASE 115. Male, 17 years old. Two weeks ago bruised shin while in swimming. Three days ago had a severe attack of pain just below the left knee, which has persisted. Considerable fever. *Examination.*—Very sick boy. A hot, red, tender swelling over the upper third of the left tibia. Temperature, 105.6; pulse, 130; x-ray, negative. *Operation.*—Large intermuscular abscess opened, and pus found on trephining the bone in the medullary cavity. *Culture.*—Staph. aureus. The following day the other tibia was operated upon for osteomyelitis, and the patient died 48 hours after the first operation.

CASE 134. Male, 9 months. Two days ago the mother noticed the left arm was swollen, and since then the child has been very restless and feverish.

Examination.—Left arm swollen and very tender from the shoulder nearly to the elbow. Temperature, 104; pulse, 130; white count, 23,600; x-ray negative. *Operation.*—Abscess in the soft parts opened and two burr openings made in the upper end of the humerus. Pus found in the medulla. The child died on the second day with a temperature of 106.8. *Culture.*—Staph. aureus.

The etiological data is similar to that in all other series of cases.

<i>Cause</i>	Trauma	10
	Secondary to otitis media	2
	Septic finger	1
	Exposure	1
	None	8

Bone involved (Cases where several were infected are classified as the first attacked)

Tibia	7	Radius	4
Femur	3	Ulna	3
Humerus	3	Fibula	1
Scapula	1	Hium	0

Single bone only ..	18 cases
Multiple bones ...	4 "
Localized	18 "
Diffuse	4 "

<i>Age</i>	
1-5 years	4
5-10 "	5
10-15 "	6
15-20 "	5

Males, 15 cases; Females, 7 cases.

Average duration of acute cases before operation, 8.6 days.

Analysis of Acute Cases (14 cases). Local osteomyelitis with no bone destruction, two cases (135, 140).

These were typical cases of a mild infection, operated upon early enough to ward off bone destruction. The diagnosis is always obscure, and a certain number of cases will be operated upon where it is wrong. If the disease is not present, the wounds heal promptly, while if it is, much suffering and loss of time are avoided. I have operated upon 40 cases of acute osteomyelitis, some on very slight evidence, and the diagnosis has been correct in all but the last two, done recently. In all the others pus was

found or a positive culture obtained from the marrow. Early in these cases frank pus is not found, but the marrow is dark chocolate colored, and the culture is positive.

CASE 140. Female, 7 years. Pain in right knee, coming on without cause, for two days. Walks with a limp. *Examination*.—Upper end of tibia distinctly thickened and tender. Temperature, 101; pulse, 120; white count, 15,000. *Operation*.—Periosteum thickened. Medulla contained a small amount of thick pus. The wound healed in four weeks and the patient was perfectly well one year later.

CASE 135. Female, 6 years. Complained of pain in the arm six days ago. This has persisted and child has been very fretful. *Examination*.—Left forearm swollen and tender just above the wrist. Temperature, 102; white count, 11,000; x-ray, negative. *Operation*.—Two burr openings made in the lower end of the ulna and pus found in the medulla. Packed. *Culture*.—Staph. aureus. Well thirteen months later.

The following three cases were seen, in which the diagnosis of osteomyelitis had been erroneously made. One was not operated upon, as hematoma appeared to be the most likely diagnosis, and this proved to be correct (Case 148). The other two were operated upon, as the evidence was so much in favor of osteomyelitis. No pus was found, however, and the culture was sterile in both. I should not hesitate to operate upon cases with similar stories at any time (Cases 152, 155).

CASE 148. Female, 7 years. As far as could be determined, the child was injured three weeks previously while coasting. Since then she has walked lame and has been restless and feverish. *Examination*.—Sick-looking child. In the left iliac fossa was a tender, semi-fluctuant mass, running up towards the kidney. Thigh held flexed. Motions of hip joint normal. Urine normal. Temperature, 100; pulse, 128; white count, 26,000; x-ray, negative. Two days later the temperature was normal and the white count had dropped to 12,500. The mass in the course of two weeks slowly disappeared and the symptoms subsided without operation. Diagnosis, hematoma.

CASE 152. Female, 11 months. Operation for mastoiditis six days ago. Yesterday the left elbow became swollen and tender and the temperature rose. *Examination*.—A brawny swelling over the lower end of the left humerus, which was quite tender. Temperature, 99; pulse, 130; white count, 20,000; x-ray, negative. *Operation*.—Lower end of left humerus trephined. No pus found in the medulla or soft parts. *Culture*.—Sterile. Wound closed in four weeks.

CASE 155. Female, 6 months. Hit thigh two weeks ago. Five days later apparently had pain in that thigh. Has been restless and lost weight. *Examination*.—Localized tenderness at upper end of left femur, with some thickening about trochanter. Motions limited. Temperature, 99; pulse, 120; white count, 15,000; x-ray negative. *Opera-*

tion.—Incision to trochanter, and medulla opened. No pus found. *Culture*.—Sterile. The wound closed in about four weeks.

Acute periosteal osteomyelitis. One case. This case is typical of the periosteal type. The cases are comparatively mild, and if there is any bone destruction it is usually only a flake off the cortex. Simple incision and drainage usually effects a cure.

CASE 105. Male, 2 years. Otitis media two months ago. One month ago a tender swelling appeared on the right wrist, which has slowly increased in size. *Examination*.—Poorly nourished child. Fretful. Tender fluctuant swelling over lower end of left ulna. Motion of wrist normal. X-ray shows periostitis lower end of ulna. *Operation*.—Abscess with half ounce pus opened and bare bone felt. *Culture*.—No growth. Wound healed in about four weeks. No further data.

Of the remaining nine cases, one has been lost track of, and in the other eight the process went on to bone destruction. Four had the operation of subperiosteal resection performed, while in four sequestrotomy only was done.

Cases in which sequestrotomy was performed:

CASE 114. Male, 14 years. Infectious arthritis two years ago. In May, 1914, a tender swelling developed over the ilium, and he was operated upon for osteomyelitis of the ilium. Seen by me two months later, with history of pain in the right shoulder and swelling with some fever, of four days' duration. *Examination*.—Right shoulder held stiff, very tender, and swollen. Temperature, 100; pulse, 140; white count, 19,000. *Operation*.—Two burr openings made in upper end of humerus, and pus found in medulla. Sequestrum was discharged later and wound healed in four months. In May, 1915, an abscess formed over the upper end of the left femur, which was opened, but the medulla appeared normal. Well, 14 months later. (I should not be surprised if this boy had more trouble with the disease of the ilium).

CASE 116. Male, 12 years. Two weeks ago had a septic finger. Two days ago had a sudden attack of pain in the right ankle, with chills and vomiting. *Examination*.—Tenderness over lower portion of left tibia. Some swelling. Temperature, 101; pulse, 120; white count, 18,000; x-ray negative. *Operation*.—Burr openings made in the lower end of the tibia and pus found in the medulla. *Culture*.—Staph. aureus. Two months later sequestrotomy of the lower end of the tibia was done. Four months after the first operation was done, a large abscess formed in the upper part of the left thigh, and burr openings made in the trochanter showed pus in the medulla. Patient had severe pyelitis and a very stormy recovery. He was in the hospital five months. A year later all wounds were solid and he walked without a limp. Blood culture was positive in this case.

CASE 122. Osteomyelitis scapula. Previously cited.

CASE 133. Male, 5½ years. One week ago, child fell, injuring his forearm, and since then has not used it. Complaints of considerable pain and has some fever. *Examination*.—Upper third of left forearm hot and swollen. Very tender. Motions of joint free. Temperature, 100.8; pulse, 140; white count, 14,000; x-ray, negative. *Operation*.—Incision over upper end of ulna, and two openings made into medulla. Pus found. Two months later a small sequestrum was removed, after which the wound healed. Well one year later.

Multiple Osteomyelitis. There were four cases of multiple osteomyelitis which are illustrative of what may happen in this disease (Cases 115, 116, 114, 122—all previously cited). Case 115 is the type of an overwhelming septicemia, with death in a few days. Case 116 illustrates septicaemia and osteomyelitis following slight superficial sepsis, and it and Case 122 illustrate the length of time that may elapse between the appearance of the acute infection in different bones. I have had other cases where a second, apparently acute, focus was operated upon one year after the first. The infection may have occurred in these cases at the time of the acute onset of the disease and remained quiescent. In one case a bone abscess was discovered by accident, in taking an x-ray of the chest, which had never caused symptoms. These four cases are all well over one year from the date of operation, but as it has been impossible to obtain x-rays, I am rather skeptical about some of them being cures.

Chronic Osteomyelitis, less than one year's duration (eight cases). Eight cases were seen after the acute stage had passed, and can be divided clinically as follows:

Bone abscess	2 cases
Bone destruction (local)	4 "
Bone destruction (diffuse)	2 "

These cases were all seen inside of four months from the onset of the disease. All but one had been operated upon and the abscess drained, or it had broken spontaneously.

Bone abscess, two cases (Cases 100, 120). These were mild local infections, with symptoms of rheumatism. The temperature in both was normal, but they showed a leucocytosis. The diagnosis was made by the x-ray, and at operation a bone abscess was found, filled with a thick pus. Cultures were taken in both instances, but through an error were not planted. Case 100 was well thirteen months later, while Case 120 was not traced. This case was an abscess of the center of the shaft of the humerus, which is one of the few bones where the disease often comes in the shaft and not at the epiphysis.

CASE 100. Male, 11 years. Twelve weeks ago received a blow on the ankle. The joint soon became sore and was poulticed, following which an abscess broke. The wound has discharged since. *Examination*.—Lower end of tibia thickened with the opening of a sinus. X-ray shows an abscess cavity with some periostitis. *Operation*.—Abscess lower



FIG. 1. Case 100. Acute bone abscess of the lower end of the tibia of several weeks' duration. Male, 11 years old. There is some periostitis and the abscess cavity is plainly seen. As the abscess is of short duration there is little eburnation of the surrounding bone. This type of abscess is cured by simple incision and drainage while the chronic abscess is not.

end of tibia, opened and packed. Considerable cortex cut away. Wound healed in two months. Well thirteen months later.

CASE 120. Male, 34 years. An attack of pain, without cause, in the center of the left arm five weeks ago, which has persisted, and is worse at night. No fever. Has had to give up work. *Examination*.—Thickened area at center of right humerus, 4 in. long. Some local heat and marked tenderness. X-ray shows osteomyelitis center of humerus, with two abscess cavities, and much new bone formation. Temperature, 98.6; white count, 12,000. *Operation*.—Two abscess cavities in medulla, filled with thick pus, drained. Much cortex cut away. Wound packed. Healed in two months. No further data.

Of the other six cases, in four sequestromy was done, and in two subperiosteal resection of the entire shaft. Sequestromy was done in three cases of disease of the femur where resection was impossible, and in one of osteomyelitis of the ulna, where it was all that was indicated.

Of the three cases of osteomyelitis of the femur, two are well and one has a discharging sinus 20 months later. I doubt if he is ever cured (Case 132). This case illustrates the difficulty of treating the disease in the femur. I also think there is more hope of curing young children and infants than adults.

CASE 132. Male, 17 years. On February 3, 1915, had an attack of pain in the lower end of the femur, and went to bed with a high fever. He was treated for two weeks for typhoid, and then seen by a surgeon, who immediately operated for osteomyelitis, opening the medullary cavity of the femur. Two months later I operated upon him, removing many large sequestra and opening several abscesses. Since then he has had a discharging sinus, leading to a cavity in the lower end of the femur. Another surgeon curetted it once, and I have operated upon him once, and attempted to cut away the sides

of the cavity, and thus obliterate it. He still has a discharging sinus, 21 months after the first operation.

In the other two cases of osteomyelitis of the femur, the child was somewhat younger, and the infections less virulent. They are classed as cures, but x-rays were not obtained, and the possibility of a resting bone abscess should be considered. These resting abscesses may persist without symptoms for many years, only to become acute after some general infection.

CASE 107. Female, 14 years. Hit thigh 11 months ago, and was in bed one month with abscess of femur. Since then a sinus has persisted, and the patient walks with a limp. *Examination.*—Motions of knee limited. X-ray shows much new bone formation about lower third of femur, with several abscess cavities and sequestra. *Operation.*—Much involucrum removed and several large sequestra. Whole cavity in center of bone thoroughly opened. Wound healed in six months. Sixteen months from date of operation had some pain in leg, but this subsided without treatment, and patient was well 22 months later.

CASE 125. Male, 6 years. Ten weeks before entrance an attack of sharp pain in the left knee after kneeling for a long time on damp earth. Knee was bandaged and later put in plaster cast, but pain continued, keeping him awake at night. Slight fever. *Examination.*—Left knee swollen. Motions limited to 30°. Lower end of femur thickened and tender. X-ray shows periostitis lower end of femur, with several abscess cavities and sequestra. *Operation.* Much involucrum cut away and many small abscesses opened and sequestra removed. Packed. Wound healed without incident, but broke down after some months, with the discharge of a small piece of bone, after which it healed at once. Considers himself well now,—17 months later.

This case was a particularly low-grade infection.

The other case in which sequestrotomy was done was osteomyelitis of the ulna, and resection was not indicated.

CASE 153. Male, 2 years. Five weeks ago, without cause, right wrist became swollen and tender, and an abscess broke. *Examination.*—Poorly nourished child. Lower end of right ulna much thickened with the openings of two sinuses. X-ray shows much involucrum about lower half of ulna, and a large sequestrum. *Operation.*—Lower half of ulna removed easily as a sequestrum. Wound healed in six weeks. No trouble since,—one year later.

Subperiosteal Resection. The operation of subperiosteal resection was performed six times, twice in cases classed as chronic and four times in acute cases in which, after the first operation, the process went on to bone destruction. This operation is really only an early complete sequestrotomy, and should be done in every case, when possible, as it removes the dead bone,

which is acting as a foreign body, early, and gives the new bone a chance to form normally. It is, unfortunately, applicable only to certain bones, as those of the forearm and lower leg. It is impossible to perform it on the femur or on the flat bones, as the ilium or scapula. Cases are reported of resection of the humerus, which is possible, but even here it is necessary to wait until a sufficient amount of involucrum has formed to give the arm some stability, and the operation is, therefore, a sequestrotomy, done rather early.

The operation should be done from six to twelve weeks after the onset of the disease, depending on the bone and the age of the patient. The ideal time to do it is after the involucrum has started to form about the sequestered shaft, but when it is only about the thickness of an egg shell. A tourniquet should always be used, and there is considerable shock following the operation. An incision is made the entire length of the dead portion of the bone, and carried down through the periosteum to the sequestered shaft. The periosteum, with the new-formed bone attached to it, is then carefully stripped from the sequestrum. This may be accomplished easily or with considerable difficulty. The dead shaft is then removed, the periosteal tube sutured with catgut and the skin wound closed, with a small drain in one or both ends. There is usually astonishingly little sepsis, but a sinus generally persists for a long time.

Regeneration takes place in from two to twelve months, the rapidity varying greatly. The new bone is very brittle and liable to fracture after slight violence for a long time. Healing, however, takes place as usual. I have had two cases in which regeneration failed to occur, but in which a later bone-graft operation was successfully done. Why regeneration failed to take place I do not know, as one case, at least, seemed to be ideal.

Of the six cases of resection, three were of the entire shaft of a long bone, the radius twice and the fibula once, and three were partial. Of the latter, two were of the lower third of the tibia and one of the upper third of the radius. Regeneration took place promptly in all, and today all are well,—one year or more after operation. In one case (141) the epiphysis of the lower end of the radius was destroyed when first seen, and there will probably be some deformity as the ulna grows. If it becomes marked I shall destroy the epiphysis of the lower end of the ulna or resect a portion of that bone.

CASE 141. Male, 9 years. Sprained left wrist Oct. 15, 1915. The same night had acute pain in the wrist, with fever and vomiting. This continued for a week, when a surgeon was called and an operation performed, pus being found under the periosteum, and in the medulla at the lower end of the radius. X-ray at this time was negative. *Culture.*—Staph. aureus. Six weeks later an x-ray showed

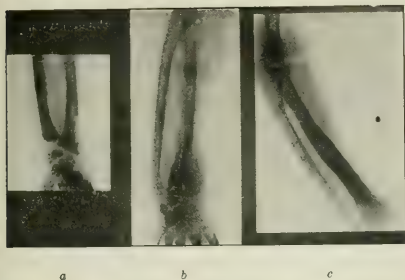


FIG. 3. Case 141. Acute osteomyelitis of the lower end of the radius, later involving the entire shaft. Male, nine years old.

- a. X-ray taken two weeks after the first operation of drainage of the lower end of the bone. The opening into the medulla is seen, and some bone destruction, but the shaft appears normal.
- b. X-ray six weeks later. The entire shaft of the radius is destroyed and there is considerable new formed bone surrounding it. Subperiosteal resection was done at this time.
- c. X-ray six months later. The shaft has regenerated although the bone as yet does not appear normal. All wounds are healed and function is perfect. A small sequestrum was removed from the centre of the bone shortly before this plate was taken. There is some shortening of the bone as the epiphyseal cartilage has been destroyed.

destruction of the entire shaft of the radius with much involucrum, and also destruction of the epiphysis. Two months after the onset of the disease, subperiosteal resection of the entire shaft of the radius was done, the shaft being removed in two portions. Following this the patient had scarlet fever. In February, 1916, the bone had regenerated, but two sinuses persisted, and two small sequestra were removed. A second small sequestrum was removed in July, 1916, after which the wound healed. Now the bone appears fairly normal with the x-ray, and function is perfect. The epiphysis of the lower end being destroyed, the left radius is somewhat shorter than the right.

CASE 108. Male, 18 years. Eight weeks previous to admission, sprained his arm. This was thought to be a fracture and was put up in splints, but later an abscess formed, at the wrist, which was opened. This wound had been draining since. *Examination.*—Well developed man. The entire left ulna is thickened. X-ray shows the shaft entirely sequestered and surrounded by much involucrum. *Operation.*—Subperiosteal resection of the lower half of the radius. Practically a sequestrotomy only of the upper half of the bone was done, as the involucrum was very thick. Regeneration was prompt, and no secondary operation was necessary. Twenty-six months later the man reported by letter that his arm was well and that he was working at his trade,—a blacksmith.

CASE 109. Male, 16 years. Injured left knee playing football three months ago. Ten days later an abscess formed to the outer side of the knee, and was opened by his physician. Since then four other abscesses have been opened below the first. *Examination.*—Left fibula much thickened with the openings of four sinuses between the knee and ankle. X-ray shows destruction of the entire fibula with considerable involucrum. *Operation.*—Entire shaft of fibula removed in several pieces. (There was so much involucrum in this case it might more properly be classed as a sequestrotomy.) It was neces-

sary to remove several small sequestra later. The bone has now regenerated, but is somewhat irregular at the upper end. The boy is well and function perfect, two years later.

There were three cases of partial resection (Cases 118, 141, 145).

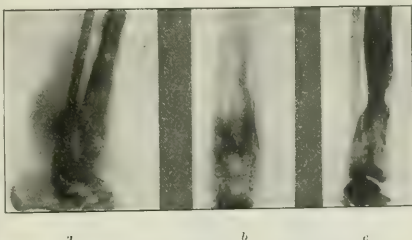


FIG. 2. Case 118. Osteomyelitis lower third of tibia. Male 13 years old.

- a. X-ray taken four weeks after the first operation of trephining. The openings made into the medulla can be seen. There is considerable bone destruction and new bone formation.
- b. X-ray taken about two months after the operation of subperiosteal resection. New bone is seen forming and the epiphysis seems to be involved.
- c. X-ray taken two years later. "Clinically the result is nearly perfect. The boy walks without a limp, and there is only one-fourth inch shortening. In the x-ray the bone is irregular and there are several small cavities in the lower end.

CASE 118. Male, 13 years. Three days ago right ankle became painful and swollen, and had chills and fever. The pain has increased and has vomited several times. *Examination.*—Right ankle and lower quarter of tibia swollen, red and very tender. Motions of joint not painful. Temperature, 102.5; pulse, 136; white count, 22,800; x-ray, negative. *Operation.*—Pus found in soft parts and in the medulla of the lower end of the tibia. Five burr openings made. *Culture.*—Staph. aureus. Eight weeks later subperiosteal resection of the lower third of the tibia was performed. The bone regenerated fairly quickly, but it was necessary to remove several small sequestra later. At the end of one year the wound was solid and the patient walked without a limp, although there was some limitation of the motions of the ankle joint. Two years later reports that he is perfectly well.

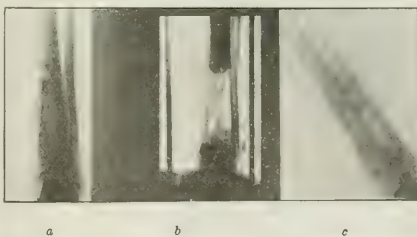


FIG. 4. Case 145. Female, 12 years old. Acute osteomyelitis of the lower end of the tibia.

- a. Condition of the bone about four weeks after the first operation of trephining. The openings into the medulla, made for drainage, are seen. There is periostitis and new bone formation, with destruction of the old shaft.
- b. X-ray five months after resection. The defect has filled in but the bone is not yet normal. There is a small sequestrum at the lower end of the normal shaft which was easily removed, and this was followed by prompt healing of the sinus. There was no shortening, and the weight could be borne on the leg.

CASE 145. Female, 12 years. Six weeks ago, after exposure, right ankle became painful and swollen. Was feverish and vomited. Has been in bed most of the time since. *Examination*.—Lower third of right tibia swollen, red and tender. X-ray shows considerable involucrum and destruction of the bone of the lower third of the tibia. Temperature, 99.8; white count, 12,000. *Operation*.—Large abscess in the soft parts opened, and pus also found in the medulla. Two weeks later, subperiosteal resection of the lower quarter of the tibia. A small sequestrum was discharged from the wound three months later. The bone regenerated rapidly, and the patient was walking in six months.

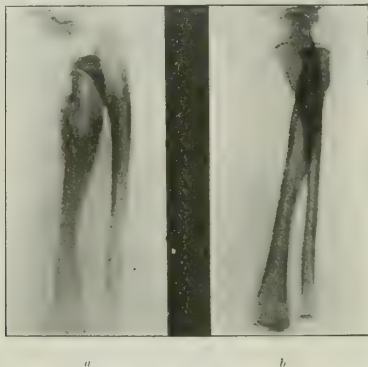


FIG. 5. CASE 149. Female 2 years. Acute osteomyelitis of six weeks' duration.

- a. Showing condition of the bone shortly after entrance to the hospital. The upper third of the radius was resected.
- b. X-ray taken six months after resection. The bone has regenerated, but there is still some periosteal thickening. The wound is solid, and the motions of the elbow perfect.

CASE 149. Female, 2 years. Middle ear two months ago. For past month has not used right arm and for past ten days the elbow has been swollen and tender. Child is fretful and sleeps poorly. *Examination*.—Right elbow held stiff and motions painful. Red, tender and swollen. X-ray shows osteomyelitis of upper third of ulna, with bone destruction and considerable involucrum. *Operation*.—Abscess in the soft parts opened and pus also found in the medulla. *Culture*.—Streptococcus. Two weeks later, resection of the upper third of the ulna. The convalescence was stormy and the child was very sick with pneumonia. The wound healed in three months. Six months later the wound was solid and the motions of the elbow normal.

SUMMARY.

As a result of a study of these cases, I see no reason to change the conclusions already drawn and previously cited. Acute osteomyelitis varies greatly in severity, from a mild local infection of a single bone to an overwhelming septicaemia, with infection of many bones, and death in a few days, but the milder forms are more common than the severe.

Cases seen within a few weeks from the date of onset should be cured by operation except in exceptional instances. One operation is usually

insufficient, and two or more are often necessary. At the first operation, however, some idea of the prognosis can be obtained and a more or less definite plan for further operations determined upon.

Osteomyelitis of the ilium or femur is difficult to treat, and the hope of a cure is much less than when other bones, as those of the forearm or leg, are diseased. Multiple osteomyelitis is exceptionally difficult to cure, but each bone should be treated as if it alone were the only one affected. Infinite pains and patience are necessary to cure any case, and they should be followed up very carefully, especially during the first year, and x-rays taken at frequent intervals.

PERSONAL EXPERIENCE WITH CARCINOMA OF CERVIX.*

By LINCOLN DAVIS, M.D., BOSTON.

I FEEL some hesitancy in placing before this Society my rather limited experience with a subject which is considered strictly gynecological. The general hospital with which I have the great privilege of being connected has adhered to the old-fashioned principle of retaining the pelvic surgery of women under the wing of the general surgical service. At the present moment there seems to be a distinct tendency for the pendulum to swing back to this position. It is generally recognized that pelvic surgery cannot be divorced from abdominal surgery. The two are too closely merged and inter-related. The leading gynecologists in the land are, and have been for some time, successfully attacking lesions above the pelvis; first the appendix, then the ureter and kidney; later the gall-bladder, stomach and intestines, and now even the breast and thyroid gland. It is a trite but truthful saying that whoever opens the abdominal cavity should be capable of coping with any complicating condition which may be found therein. Who can say that a man capable of performing the radical removal of the carcinomatous uterus shall not operate upon the stomach or gall-bladder, or that the skill requisite to the closure of a vesico-vaginal fistula shall not be applied to the closure of an intestinal fistula? Gynecology has expanded to embrace practically the entire pelvic and abdominal surgery of women. But this is an inconsistent limitation, for the removal of the kidney, appendix or gall-bladder, or operations on the alimentary tract do not present any sexual variations. If such a liberal interpretation be granted to the field of gynecology, then in fairness to the general surgeon it must also be conceded that a man capable of performing a plastic repair of a cleft palate, a gastro-enterostomy, or intestinal suture, is likewise capable of the plastic repair

* Read before the Obstetrical Society of Boston, Dec. 26, 1916.

of lacerations of the genital tract; or that one able to perform the radical removal of cancer of the rectum is well equipped to attack the same disease in the uterus. The disrepute of the plastic perineal repair work of the general surgeon of the past was referable more to lack of interest than to lack of skill. Even in my day as an interne, it was the common practice to relegate such cases to the house officer, with results that might well be expected. At the present time, with a truer recognition of the relative degrees of skill and judgment required on the part of the operator, the internes and house surgeons are given herniae and interval appendicectomies, and only rarely, after sufficient apprenticeship, plastic repair work on the genital tract. The field of general surgery, with its great advance in many lines, is manifestly too broad for the mastery of all its diverse branches by any one man. There is recognition of this individual limitation at the Massachusetts General Hospital, and apart from the establishment of separate Orthopedic and Genito-Urinary departments, the general surgical service, through its Executive Committee, makes individual assignments of certain subjects which present peculiar problems or require special skill, study or interest for their proper investigation and treatment. In this way it is expected that every member of the Staff may be a general surgeon capable of performing the routine surgery of a general service, but with opportunity and incentive to follow out some special line of work which engages his particular interest or calls forth his particular capabilities.

This plan has undoubted merit and is capable of great development. It allows an individual opportunity to specialize in a narrow field but with a viewpoint broadened by contact with the wide expanse of general surgery.

I have held the assignment of cases of carcinoma of the uterus at the Massachusetts General Hospital since August, 1915. During a portion of this time the assignment has been shared with another member of the Staff. Twenty-six cases have come under my personal charge under the assignment, and my total experience with carcinoma of the cervix, including private cases and hospital cases before the assignment, consists of 51 cases. In every single one of these fifty-one cases the disease was clinically unmistakable and in all but three or four the ulceration of the cervix was considerably advanced, in the majority hopelessly advanced. In every case the diagnosis has been confirmed by microscopic examination. It is a striking fact that no cases of unsuspected or incipient carcinoma of the cervix have been revealed by microscopic examination. At the present time, a systematic search is being carried on in the Out-Patient Department for these cases, and all precancerous lesions of the cervix, such as long-standing erosions and ulcerations of lacerated cervixes, leucoplakia, etc., are being sub-

jected to microscopic study. Of the total of 10,000 new patients among women admitted to the Out-Patient Department during the year 1915, cancer of the cervix was found in 9, less than one in a thousand. It is presumable that the disease existed in a precancerous or unsuspected form in many more than this number, and it is to be our earnest effort in the future to discover them, if possible. At the present time I am completely in the dark as to the clinical appearances of the precancerous cervix. It is only by the collection of data as to the clinical appearance and microscopic structure of large numbers of lacerated, eroded, and ulcerated cervixes that facts may be obtained which may shed some light on this obscure subject.

Out of the total of 51 cases treated, 33 were subjected to some form of palliative operation. These palliative operations consisted for the most part of curettage and cauterization. The Percy technic has been carried out completely in eight cases only, that is, thorough slow cooking of the growth, with ligation of the internal iliac and ovarian vessels, the hand of an assistant guiding the direction of the heating iron from within the peritoneal cavity. In four other cases the Percy technic was employed as far as the use of the heating iron was concerned, but without ligation of the internal iliacs.

It is only fair to the Percy method to state that in all but one case in which it was employed the disease seemed hopelessly advanced, certainly too much so to permit of radical removal.

The one favorable case in which a radical hysterectomy might have been done, but in which as a matter of fact the Percy operation was adopted, has shown extension of the disease within six months and the patient is now dying, one year from date of operation.

There have been three cases in which the Percy method was used in which very distressing urinary fistulae developed. There was one case of moderate secondary hemorrhage, controlled by packing.

There was but one operative fatality among the 33 palliative operations. This was the case of a severely prostrated and exsanguinated woman, who, after excision and cauterization of a fungating mass protruding from the cervix, died of bronchopneumonia.

As to end results, curettage and cauterization have given a short period of immunity from hemorrhage and foul discharge of from six weeks to six months. There has been no noticeable lessening of pain.

Of the 12 cases in which the Percy technic was carried out in whole or in part, four have not been heard from since. Two have died of the disease, respectively, three and five months after operation. One patient is at present dying of the disease one year after operation. Three patients have been heard from three to eight months after operation with unmistakable evidence of disease in the pelvis; one of these, how-

ever, seems to have been greatly relieved symptomatically. One patient reports by letter six weeks after operation as feeling relieved.

One patient, six months after operation, although suffering from urinary fistula, presents no evidence of malignancy.

All of these surviving cases, and particularly the last, must be followed up rigorously to permit of definite conclusions.

From this brief and inconclusive experience I must own that I feel little enthusiasm for the Percy operation. Whether from faulty technique or lack of experience, I have found the control of the requisite amount of heat most difficult of attainment. Any procedure adopted as a mere palliation, which results in the distressing sequela of urinary leakage in 25 per cent. of the cases, must be cautiously considered. If the method were really curative, one could more cheerfully recommend such a risk.

The rationale of the Percy operation is based on the assumption, to quote the author himself, "that cancer is destroyed when the temperature in the mass is raised to 50-55.5 C. (122-131 F.), while the vitality of normal tissues is not changed until the temperature exceeds 55 to 60 C. (131-140 F.). The basic idea, then, of this treatment—and this cannot be too often emphasized—is not cauterization, but the production and dissemination of heat in the gross primary mass of cancer." The experimental evidence upon which Percy's attractive theory is based is the work of Haaland, Clowes, Loeb, Baeslack, Jensen, and Lambert, and consists of experiments made with the transplantable tumors of mice, carcinomata and sarcomata, exposed to varying degrees of heat *in vitro*. Suggestive as these laboratory findings may be, actual conditions found in cases of cancer of the uterus in the human being are far different. The only proof of a clinical problem is actual experience accurately recorded. The few cases on record of post-mortem examination after the employment of Percy's technic do not seem to bear out the author's theory of the selective action of heat upon the carcinoma cells with immunity of the neighboring connective tissue cells.

Dr. Percy has not as yet published his results. In 1914 he stated that he believed "that a large number of cases, if not practically hopeless when first presenting themselves for treatment, will give approximately 50 per cent. remaining free from recurrence over five years." We must await Dr. Percy's statistical report of results before passing judgement on the method. The theory upon which it is based is ingenious and attractive. His electric heating iron or cautery is certainly a most excellent and useful instrument, far better than any similar one ever before offered. The advantages of an assistant's hand in the open abdomen are also manifest. That the method has undoubted value as a palliative measure I think there can be no doubt. That it is of value as a curative agent, except

perhaps in very early cases, remains to be proved. That it is capable of doing much damage and setting up most distressing sequelae is unquestioned.

The method is certainly worthy of thorough test, but should be used with care and discretion and with due cognizance of the dangers incident to striving to reach and cure far outlying areas of disease with a destructive heat which at best is but crudely and uncertainly controlled.

During the last year a considerable number of the apparently hopeless cases have been referred to the Huntington Hospital for treatment with radium. A few cases have been sent there without preliminary palliative operations. I am unable at present to state what the results have been in these cases.

Nineteen cases have been subjected to abdominal hysterectomy, of which 4 were done in private practice, the others at the clinic. Not all were favorable cases by any means, in many the disease was far advanced with extension into the parametrium and vagina and fixation in the pelvis. In one case the disease had invaded the bladder and rectum, necessitating resection of a portion of both these organs. The operation done was radical in all but one case, in that it involved dissection of ureters and ablation of as much parametrium and cuff of vaginal wall as possible. The one exception was a case in which the disease was incipient, and a total abdominal hysterectomy was performed without dissection of the ureters or removal of parametrium. I hasten to state that I believe this to have been a mistake. It is in the favorable cases that we should do our most radical operations. If one believes in the radical operation at all, it is only right to let the favorable cases have the greater chance of cure which it may give. In only one case was a systematic dissection of the pelvic glands, as advocated by Wertheim, attempted. In this case a chain of carcinomatous glands were dissected from along the iliac vessels. This patient had one year of comparatively good health but has had severe abdominal and sacral pain for the last six months, and now at the end of the second year presents a definite recurrent growth in the abdomen.

There have been two operative fatalities, in both the result of shock and hemorrhage, giving an immediate mortality of 10.5 per cent.

The first two cases operated upon are living and well, respectively 6 and 5 years after operation. Both have been recently examined personally: there is no trace of the disease, and both are in blooming health. One other case has been examined 1 year and 1 month after operation without sign of recurrence. Three patients are known to be living from 1 to 2 years after operation but have not been examined. Two cases are known to have died of the disease respectively 6 months and 1 year after operation. In one case already mentioned there is marked recurrence 2 years after operation. Eight pa-

tients have been operated on within the year and no data as to their present condition has been as yet received.

The radical abdominal operation in my hands has not been without distressing sequelae, but such conditions can be endured with a greater degree of equanimity if there is offered a reasonable prospect of cure of the disease. There have been no less than 6 cases of urinary fistula (31%). In one of these cases there was a rectal fistula as well; this was a case in which bladder and rectum were involved in the disease and in which resection of a portion of both these organs was unwisely attempted. In the five other cases urinary fistulae resulted late, 7 to 10 days after operation, and were not due to any actual opening of the urinary tract at the time of operation, but were probably the result of sloughing of traumatized tissue. In one case the fistula was successfully closed at subsequent operation. In one case, and I think also in one other, the fistula has closed spontaneously. In another case an attempt will be made later to close the fistula by operation. One cause of the high percentage of fistulae is undoubtedly attributable to bad technic in placing a gauze vaginal drain in contact with the raw surface of the bladder and ureters. In the most recent cases a vaginal cigarette drain without protruding gauze has been used, which it is hoped and expected may result in lessening this serious complication.

In conclusion I wish to state that it is my firm conviction that the problem of the cure of cancer of the cervix in no wise differs from the problem offered by the same disease in other organs of the body, and that early and radical removal by the knife not only gives results which compare favorably with those obtained in other organs, but that for the present, at least, it is the most successful of all known methods.



INTESTINAL VENOUS STASIS: DIFFUSION OF BACTERIA AND OTHER COLLOIDS.*

BY FENTON B. TURCK, M.D., NEW YORK CITY.

Our ideas of medicine have been largely founded on a morphological or static conception of the organism. Now attention is being directed more and more to the consideration of the dynamic properties of life.

Synthetic chemistry and the more recent studies in the science of energy, especially as applied to protoplasm and other colloids in biology, have created a new concept of both normal and abnormal conditions.

*Read before the joint meeting of the Pediatric Section of the New York Academy of Medicine, the New York State Society, the New Jersey Pediatric Society, the Philadelphia Pediatric Society, and the New England Pediatric Society, held in Boston, Nov. 4, 1916.

A transparent colloid, as boiled starch mixture, forming a jelly-like fluid containing finely diffused particles, may pass easily through a filter, as though it were a true solution. This illustrates what we mean by a colloidal suspension. For the fluids of the body that diffuse through the tissues as through a filter have much the same properties.

The degree of permeability of the membrane (filter), itself colloidal in character, determines the rate of diffusion of the colloid suspension that filters through. The permeability of the membranes in the living organism vary under normal as well as abnormal conditions, and represents an adjustment of the colloidal particles to the pores of the filter.

Bechold¹ holds that "life is inconceivable except in a colloidal system." The diffusibility of a colloidal emulsion (such as a colloidal suspension of bacteria) passing through a colloidal substance (substratum), as animal tissues, is determined by laws of physics now only partly understood.

The study of the phenomena of the passage of colloids, such as the white of egg, unchanged through animal membrane (as the mucous membrane of the intestines) is surrounded with considerable obscurity, because of the difficulty in identifying colloidal substances after filtration. In this connection Bateman's statement, "Raw white of egg causes diarrhea in dogs, cats, rabbits and men—and after several days tolerance occurs" (that is, antibodies are developed), is of interest and in line with the facts brought out by this study.

My earlier experiments demonstrated^{2,3} that the intestinal tube is permeable to the intestinal flora. The degree of this invasion is much influenced by changes in the splanchnic circulation (as in shock), which alter the character of the intestinal wall and render it pervious to all forms of bacteria.

My more recent investigations^{4,5} demonstrate that an emulsion of bacteria, such as the colon bacilli, injected into the intestines of the fetal animal, rapidly diffuse through membranes and tissues. By appropriate staining methods the rate of diffusion and the route by which the diffusion occurred could be studied. When bacteria are injected into the intestines of the fetus, they show the distinct routes that may be taken from any depot along the entire tube, thus the kidney or the liver is first involved according to the location of the injection into the intestinal tract. Bacteria fed to the mother may show their effect on the fetus⁶.

BACTERIAL PERMEABILITY OF THE INTESTINAL WALLS.

Because of the more rapid diffusion of the bacteria in the fetal animal, the diffusion route which they take from the intestines can be advantageously studied. It has been shown that they take the same diffusion route which they have been found to follow in the adult.

In order to demonstrate the passage of the bacteria, the tissues are fixed in formalin, without alcohol, but with appropriate stains, and it may then be seen that the passage of the bacilli takes place from the intestinal tract into the intestinal wall, (1) between the epithelial cells—not into or through the cells—and between the glands, and (2) between the muscle cells of the muscular mucosa into the areolar tissue. Bacilli do not enter the blood vessels or the lymphatics, but transmigrate through the interstitial route by diffusion into the submucous tissue. Rapid bacteriolysis is seen to take place first in this submucous zone and for this reason I have called it the “Zona Transformans.” Hadley, in his studies on “Coccidia in Sub-Epithelial Infections of the Intestines of Birds,” has confirmed this finding. He says “By the presence of Coccidia in the *sub-epithelial territory* it is interesting to observe that they may be present there in large numbers and even when the adjacent epithelial layers carry but slight intercellular infection.

The following table shows the elective diffusion route and the depot of detention of the injected bacteria in the fetal animal:

one hour; the juice was then again expressed, to feed separately to the animals. The pulp that remained, the extract-free meat, was fed to the animals dry.

The animals were then fed with cultures of the colon bacilli.

In the animals receiving the extractives, it was demonstrated, on histological examination, that the organisms passed into the submucous tissue, while in the animals that received the extract-free meat no bacteria could be demonstrated in the tissues.

Experiments were also performed, using opium and cathartics, which showed that these did not favor the migration of the bacteria.

The simultaneous feeding with beef extracts or fatty acids, together with the cultures of *B. coli*, produced prompt bacteriological migration from the intestines. The injection of toxins, such as the diphtheria toxins, was also found to favor bacterial emigration from the intestines.

Another investigation which we carried had for its object the determination of the relative effects of raw meat extract, cooked meat extract and extract-free meat. One group of animals (rats) were fed on raw meat extract to which

TABLE I.
INJECTED WITH 24-HOUR CULTURES OF COLON BACILLI,
AND THE FETAL PIG INCUBATED FOR SIX HOURS.

SITE OF INJECTION	ROUTE OF DIFFUSION.	PRINCIPAL SITE OF RETARDATION OR ARREST.
Stomach, through a tube.	Through the gastric mucosa into submucosa to the duodenum—the bile duct wall tissue to liver.	Between the liver cells; not found in the cells.
Umbilical cord.	Via interstitial tissue to liver.	Between the cells; not in the liver cells.
Jejunum and ileum.	Through the mucosa in submucosa cephalad to the pyloric region of the stomach and duodenum.	Masses of bacteria accumulate in the pyloric area.
Rectum.	Interstitial route, bladder wall and up the wall of the ureter (submucosa).	Kidney.

The histological changes at the site of retardation or arrest of the bacteria are shown by the fact that the nuclei of the cells of the parenchyma lose their staining properties to both Gram and hematoxylin stains.

This loss of nuclear staining properties produced by the *B. coli* is in strong contrast to the effect following the injection of the Gram-positive anaerobic *Bacillus capsulatus aerogenes*. The latter cause, through the *proteinasce*, a digestion of cytoplasm leaving the nucleus intact.

FEEDING MICE AND RATS WITH AND WITHOUT BEEF EXTRACTIVES.

A determination of the relative effect of the feeding in conjunction with the feeding of *B. coli communis*.

Method. The meat juice was obtained by expressing the juice from raw beef. The extract-free beef was prepared from the residue after expressing the juice.

The pulp was put in boiling water and steamed under two atmospheric pressures for

cultures of the colon bacilli were added. A second group were fed upon extractives from cooked meat in addition to cultures of the colon bacilli. A third group were fed upon extract-free meat (pulp residue after removing the extractives).

After one month's feeding on the extractives of raw meat, together with the colon bacilli, all the animals died. The rats fed on the extract-free meat did not die but were killed at this time for comparison. There had been no marked difference in the behavior of the animals during life. The histological examination, however, showed that in all the animals fed with extractives the intestinal bacilli had migrated from the intestinal lumen into the submucous tissue. Death was evidently due to “acidosis.” The histological examination showed autolysis of the tissue cells, especially in the tissues of the mucous membrane in the pyloric region and in the liver. The nuclei, as in my previous observations, showed a lack of staining properties.

TABLE II.

THE MIGRATION OF INTESTINAL BACTERIA AFTER FEEDING ANIMALS WITH B. COLI TOGETHER WITH MEAT EXTRACTS OR FATTY ACIDS.

NAMES OF ANIMALS	NUMBER USED	FEEDING B. COLI	MEAT EXTRACT	HEATED FAT	MIGRATION OF BACTERIA IN TISSUE	BACTERIA NOT FOUND IN TISSUE
Dogs	8	+	+		6	2
Cats	5	+	+		4	1
Rabbits	10	+	+		8	2
Guinea pigs	12	+	+		10	2
Rats	10	+	+		9	1
Monkeys	6			+	6	0

The experiments with monkeys offer very decided evidence that heated fat fed to animals increases the diffusion rate of the intestinal bacteria, causes them to penetrate the intestinal wall more rapidly, and hastens a fatal termination. This phenomenon is more marked when the fatty acid content is increased.

The following protocols on six monkeys fed with heated fat are of considerable interest as none of the animals lived, on an average, more than six weeks and all showed uniform lesions associated with bacterial invasion from the intestinal tract. No bacteria were fed, but the fatty acids fed to the animals seemed to induce the migration of the intestinal flora into the tissues.

Method. Six monkeys were fed with small squares of bread fried in heated cottonseed oil for thirty minutes. This fried toast was given in addition to the usual daily vegetable diet.

TABLE III.

Monkey	No. 1	died in	61 days
"	No. 2	"	57 "
"	No. 3	"	42 "
"	No. 4	"	31 "
"	No. 5	"	28 "
"	No. 6	"	38 "

Blood examinations were made in all these monkeys, which gave the picture of pernicious anemia, with the characteristic increase in polynuclears.

At the same time a series of control monkeys, fed in the usual way without the fried toast, remained in a normal condition.

Post Mortem. The tissues were pale. Peptic ulcers were found in the pyloric region. There was fatty infiltration of the tissues, demonstrated especially in the liver, together with marked congestion of the splanchnic vessels.

The histological examination showed migration of the bacteria into the submucous tissue at various levels of the intestinal canal and in various stages of bacteriolysis. Autolysis of the tissue cells, with the usual picture of "acidosis," was found in other animals where the diffusion of the bacteria was well established.

The feeding of the heated fat gives a more intense histolytic action than that produced by the feeding of bacteria or other protein alone.

The picture is the same, however, except in degree. Fatty acids in the alimentary canal increase the permeability of the intestinal wall to the intestinal bacteria and increase the resulting "acidosis," the histolysis, venous stasis and cause death in a few weeks in monkeys. D. P. Davis, *Jour. Infect. Diseases*, Nov., 1916) finds that white rats, fed at intervals of a few days with large quantities of cultures of *Sporothrix schenckii* and fat, may become infected; that the infections tend to localize in the mesentery, peritoneum, and spleen, and that the organisms appear to penetrate the normal mucosa of the intestinal tract. No lesions, active or healed, are visible in the wall of the stomach or intestines.

We have in these findings a very plausible explanation of the reason milk mixtures, high in fat content, frequently cause intestinal disturbances in infancy, and the reason for feeding fat-free milk when we are dealing with such disturbances.

THE RÔLE OF THE SPLANCHNIC CIRCULATION, ESPECIALLY VENOUS STASIS, IN BACTERIAL INVASION.

Method. In this series of experiments over 200 animals were used. In one group of these the abdomen was opened under anesthesia and fully exposed to the air until marked venous stasis and shock was produced. The animal's abdomen was then closed and after recovery bacteria were introduced into the stomach. In a second group no bacteria were given.

The following day sections of the intestines were made and subjected to microscopical examination.

Result. Bacterial invasion was demonstrated in most of the slides examined. The animals not fed with bacteria gave positive results as well as those that were so fed.

The effect of cold air on the exposed viscera is to increase the bacterial invasion.

Prolonged anesthesia without the abdomen being opened, where shock was evident, also increased the permeability of the intestinal wall to the intestinal bacteria.⁸

ANTIBODY FORMATION IN THE ZONA TRANSFORMANS.

We have called attention in the earlier part of this paper to the bacteriolysis that is seen to take place as the bacteria cross the threshold of the muscular mucosa in the submucous tissue, the *zona transformans*.

The bacteria that escape immediate bacteriolysis migrate cephalad in this zone up to the pyloric region where complete bacteriolysis occurs. The localized formation of antibodies in the *zona transformans* is apparently specific.⁹ This is shown in the following protocols.

Method. After cleaning the surfaces of the mucosa of the duodenum, the jejunum and the

upper part of the ileum of rabbits, it was scraped from the muscle wall. The mucosa was removed so that none of the glandular elements remained. The cellular substance and the fluid were then recovered.

The blood serum from the femoral vein, mesenteric vein, the mucosa and the submucosa were now placed in separate capsules (frozen CO_2), and placed in vacuum chambers with H_2SO_4 . They were kept in refrigeration and protected until completely evaporated. The residue of each was then weighed and comparative titers made against the broth culture of the homologous cultures secured from the intestines.

The dried residue of serum and cell substance was made into a two per cent. suspension with 8 per cent. salt solution. Dilutions of 1/20, 1/50, 1/100, and 1/200 were then used. One c.c. of serum and cell substance was added to 0.5 c.c. forty-eight hour culture of autogenous *B. coli* and incubated thirty minutes. This was then injected intravenously into young rabbits. When anaphylaxis occurred within three minutes this was regarded as a positive reaction.

Slight convulsions and recovery, or death delayed from twenty-four hours to one week, were considered, for this quantitative work, negative.

DILUTIONS	MUCOSA AND SUBMUCOSA	SUBMUCOSA ZONA TRANS- FORMANS	MESENTERIC VEINS	FEMORAL VEINS
1/20	+	+	+	—
1/50	+	+	+	—
1/100	+	+	+	—
1/200	+	+	—	—

Controls. In controls there was no anaphylaxis even when double quantities of the mucous membrane sera of *B. coli* cultures were given.

On injecting submucous substance (amboceptor) without the addition of culture, no anaphylaxis occurred. If death occurred later it was invariably due to infection. On injecting submucous substance in the fresh state in large quantities, anaphylaxis and death never occurred. When death was delayed for several hours, it was usually due to the action of the "amboceptor" on the bacteria and bacterial products already in the tissues. When death was delayed for a week it was always due to infection.

CONGESTION OF THE SPLANCHNIC VESSELS.

The animals receiving the injection of the homologous intestinal bacteria, sensitized with an emulsion of tissue from the zona transformans, showed symptoms of acute venous dilatation of the splanchnic vessels, and this was apparently the cause of the sudden collapse and death.

To determine the effect of the anaphylactic reaction on the splanchnic vessels, the abdomen was opened and the vessels examined under a glass at the moment of the intravenous injection

of the intestinal bacteria with the submucous material. The immediate prompt dilatation of the splanchnic veins, with corresponding contraction of the arteries, was demonstrated in each animal under observation, in which collapse and death followed immediately after the injection. In those animals in which there was a delay in the collapse and death there was also retardation in the intestinal venous stasis. Sublethal doses caused proportional slight venous stasis followed by recovery.

HISTOLOGICAL EXAMINATION OF THE FOLLOWING PROTOCOLS.

FIG. 1. Dog. This dog was fed with cultures of intestinal bacteria for two months. Laparotomy was then done under ether, and the viscera exposed to the air for one and one-half hours, when the abdomen was closed. Forty-eight hours later the abdomen was opened under ether and a specimen of small intestine removed and fixed immediately.

The section shows migration of bacteria from the lumen into the intestinal wall, penetrating the basement membrane at the bottom of the glands. Bacteriolysis is seen going on just below the muscularis mucosa. There are no evidences of an inflammatory process, no leucocytic infiltration, etc., but a wholesale invasion.

FIG. 2. Dog. This dog was fed for three months with cultures of intestinal bacteria; marked dilatation of the stomach resulted. Laparotomy was performed under ether and the stomach was found greatly dilated. A specimen was cut from the wall of the small intestine and fixed immediately.

This section shows contracted arteries and widely dilated veins, with serious extravasations into the surrounding tissues.

FIG. 3. Cat. This animal was fed cultures of *B. coli* for over two months. A laparotomy was then performed under ether. In this instance the cecum was found much dilated. A specimen from the wall of the cecum was removed and fixed at once.

The section shows beginning waxy degeneration of the cytoplasm of the muscle in spite of the heavy stain employed as shown by the nuclei.

FIG. 4. Dog. This dog was fed with cultures of *B. coli* for two months, when a laparotomy was done under ether and the viscera exposed for two hours. After recovery from the operation, the animal was fed as before for a week. Laparotomy under ether was then repeated. The stomach was found much dilated and the muscle of the gut flabby. A specimen was cut from the small intestine and fixed at once.

(a) The section shows beginning cytolysis of muscle cells with hyaline degeneration. The nuclei do not take the stain well.

(b) (Higher power of the same.) A waxy appearance of the cytoplasm is evident with a fading out of the fibrillae. The nuclei show irregular outlines with breaking up of the chromaffin; muscle fasciculi are seen partly separated.

These experiments and protocols have been selected from a large number of similar ones as affording an explanation of the etiology of some of the intestinal disturbances of infancy and

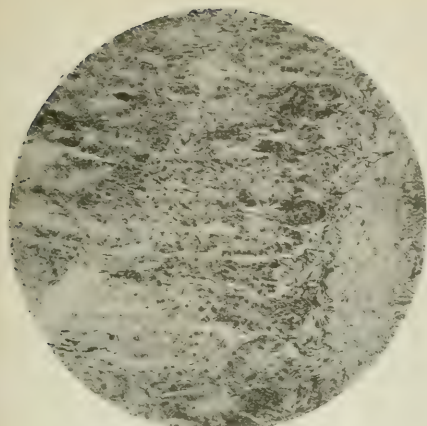


FIG. 1.

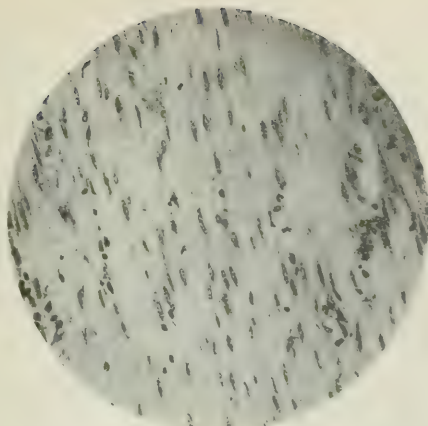


FIG. 4 a.



FIG. 2.

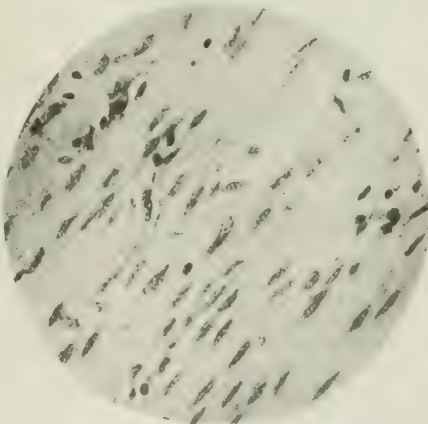


FIG. 5 b. Same as Fig. 4, higher power.

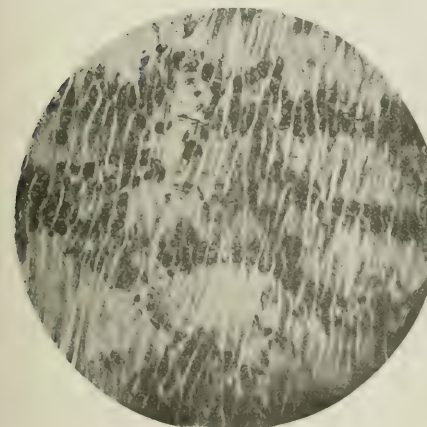


FIG. 3.

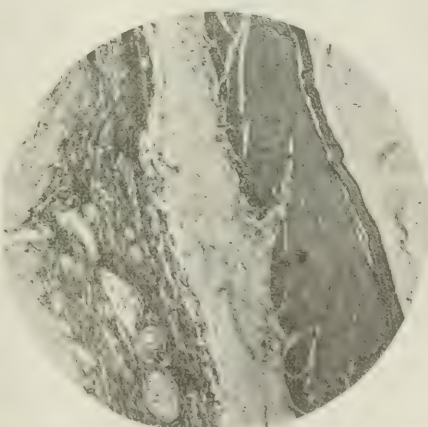


FIG. 6. Showing entire process of diffusion through intestinal wall.

childhood as well as of those of adult life. They afford an explanation of some of the effects that have been obtained by some forms of treatment which we have been accustomed to employ, and they also afford a basis for the introduction of certain factors into the treatment of these conditions, which have hitherto not been generally applied.

We have as etiological factors in disturbances of the digestive tract stasis induced by frequent feeding, causing precipitation and delayed digestion, fractional digestion and the accumulation of fatty acids. We have also the physiological changes which are not due to a lack of oxygen or increased CO_2 but to acidosis. These factors just mentioned, stasis, fractional digestion, and the accumulation of fatty acids, lead to fatigue of the muscle cells and the asphyxiation of these cells.⁸ As a result we get an atony of the muscle wall, permeability and diffusion of the bacteria and of the fractional protein products, and the bacteriolysis and proteolysis which these undergo in the zona transformans finally leads to an anaphylactic reaction. In consequence of this reaction we see further venous stasis from dilatation and fatigue of the walls of the intestines, with a simultaneous contraction of the arteries. Thus a vicious circle more or less complete is established and we have what is clinically designated "acidosis," and which may be either acute or chronic.

One of the factors associated with acidosis is the loss of the alkaline bases in lowering the tone and increasing the permeability of the intestinal tract.

The symptoms of acidosis in its chronic form are wasting, anemia, marasmus, etc.; those of the acute form are shock, distention, prostration, convulsions, etc.

If, now, our explanation of the etiology is correct, and the evidence presented seems very conclusive, then our aims in the treatment of these conditions must be: 1. To reduce fatigue of the hollow muscle. 2. Prevent fatty acid intoxication. 3. Prevent intestinal retention. 4. Prevent absorption of intestinal flora. 5. Correct acidosis. 6. Reduce splanchnic venous stasis. 7. Increase immunity. 8. Maintain nourishment.⁹

The general measures directed to the attainment of these objects are as follows:

First establish regular *feeding periods* to conform to the curve of muscle work and relaxation.

Provide food rich in the salts of calcium, magnesium, potassium and sodium, to replace the lost bases incident to the acidosis, *e. g.*, vegetables should be steamed for several hours rather than boiled, so that the salts are retained and are available for easy digestion. These steamed vegetables should be passed through a wire sieve and made into a purée.

Reduce the intake of fat to minimum requirements. Prohibit heated fat and guard against stale fat, that is, fats that have begun to be de-

composed by bacteria into fatty acids. (Olive oil is useful in the recuperative stage.)

Allow no extractives in the food, no soups, bouillon, etc. Protein without extractives is completely digestible in the upper part of the digestive tract and there are then no extractives to render the intestinal contents a culture medium and induce bacterial invasion and a possibly resulting acidosis.

Older children may be given extract-free meat.

For a time the total protein intake may be reduced. (Kurt Blunhorn, *Monatsch. Kinderk.*, Vol. 13, No. 7.)

Baths, both foot baths and sitz baths, containing salt with soda, beginning at 105°F. and gradually raised to 110°F., are also indicated.

Medication depends upon whether we are dealing with an acidosis in the chronic or the acute form.

To prevent the passage of the bacteria from the intestinal tract, demulcent Irish moss, liquid vaseline and fine bran have been found effective.

Treatment of Severe Acute Cases. This consists in (1) gastric lavage, daily, hourly, or continuously, as the severity of the symptoms indicate. (2) Colonic lavage.

In this connection it is well to recall that Weeks has shown, after watching the routine use of the Murphy drip after operations in various hospitals, that half of the distress complained of by the patients he thought was due to retention in the bowel of gas or too much fluid. This is especially so in little children. Therefore, the use of the double recurrent tube with continuous lavage is to be preferred. (Turck, "Treatment Abdominal Viscera through Colon," *Jour. A. M. A.*, Oct. 7, 1899, and May 5, 1900.) The outer tube is introduced into a bottle, and the inlet reservoir connected with the inlet tube raised a little above the patient.

(3) Lavage with weak silver nitrate, followed by infusion of sodium bicarbonate solution. In extreme cases one may find it necessary to resort to a transfusion of autoserum. (4) Demulcents. (5) Venesection, followed by infusion of sodium bicarbonate solution. (6) Continuous bath.

THE TREATMENT OF MODERATELY SEVERE AND CHRONIC CASES.

In these, as in the acute cases, gastric lavage and colonic lavage hold an important place. The colonic lavage, however, should in these cases be given with the gentle pneumatic gymnastics method. The alkaline demulcents have also a place in these cases. These chronic cases are the ones in which, according to my experience, one finds an appropriate field for the employment of autogenous vaccines, made according to the method which I will describe.

Many children have two microorganisms present, often the *B. coli* and either a streptococcus or a staphylococcus in symbiosis. These are frequently found in the urine, having passed

from the intestines, migrated through the tissues and escaped by way of the kidney.

METHOD OF PREPARING VACCINES.

(1) Make cultures from feces. Isolate *B. coli* and other cocci usually in symbiosis.

(2) Centrifuge the urine. Isolate *B. coli* and cocci (usually in symbiosis).

(3) Centrifuge the stomach contents, obtained from morning fasting stomach. (Avoid clumps of mucus that appear to come from the mouth.) Isolate *B. coli* and cocci usually in symbiosis.

(4) Combine these cultures. Secure the patient's serum. Spread over an agar slant and freely sow the combined or mixed cultures. Cultivate for 36 to 48 hours. Kill the culture in tricoresol, not by heat.

(5) Sensitize the culture with the patient's serum. Prove the culture dead by incubation.

(6) Count. Put in ampules in graduated, increasing doses, from 100,000,000 to 1,000,000,000.

These microorganisms, secured from the urine and stomach contents, have thus been activated by the patient's own serum or secretions and have acquired certain specific antibodies which render them more valuable for vaccine purposes. In addition, growing the microorganisms cultivated in the patient's own serum *in vitro* permits an additional absorption to take place under conditions more nearly approaching those *in vivo*. Finally, by incubating the killed bacteria with the patient's serum, additional antibodies are taken up, making a most perfect vaccine, and one with a most potent effect.

THE PREPARATION OF MEAT, BEEF, MUTTON AND CHICKEN.

Preparation of steak. Meat is chopped up or left ground in the meat grinder, and the juice is pressed out. Or, again, it may be left in cold water over night and then squeezed out. The juice is then thrown away and the meat is placed in a steamer with a little cold water and steamed for two or three hours. The juice is then discarded. The pulp remaining represents the nutritive part of the meat with the unnecessary and poisonous part removed.

This extract-free meat may then be made palatable in a variety of ways:

1. Milk or cream may be added, with a little flour, heated, seasoned, and spread on toast.

2. It may be made into small patties, dipped in egg, and broiled.

3. A mixture of half bread crumbs and half meat may be flavored with bay leaf or curry, bound together with milk and egg, and baked in the oven as a veal loaf; it may be eaten hot or cold.

The extract-free meat may be mixed with a little currie, and milk added; it may then be placed in a porcelain dish and surrounded with

a border of rice, covered with beaten white of egg, and then quickly heated in the oven.

5. The meat may be made into cutlets and heated with a little butter in a pan, but not fried in the ordinary way.

With the exercise of a little ingenuity many other ways will suggest themselves by which meat of this kind may be made palatable and attractive.

A review of my clinical cases covering a period of fifteen years, which have been treated with autogenous vaccines, shows a higher percentage of permanent good results than the cases treated previously to that time without the vaccines. The ages of the patients to whom this method of treatment has been applied have ranged all the way from infancy to eighty years. I do not claim that the vaccines have been the only factor in securing unusually good results, but that the vaccines in combination with the other methods, the *combined system*, warrants distinctly favorable conclusions on the basis of a careful analysis of the data presented by 158 cases in which complete data could be collected, and a much larger number in which the data were more or less incomplete. While my conclusions are based on purely empirical results, as Gay remarks (*Jour. A. M. A.*, Oct. 28, 1916, p. 1263), "Purely statistical methods of investigation must in more alert minds yield to comparative studies." I have attempted to place the experimental facts before you and they seem to have a direct relation to our clinical experience. It seems to me that this experimental data, bearing on the etiology of intestinal disturbances, should possess a special interest to the pediatrician, not only on account of the importance of alimentary conditions in infancy and childhood, but because a large percentage of chronic intestinal diseases in the adult have their inception in the faulty conditions of the alimentary tract in infancy and childhood:

REFERENCES.

- ¹ Bechhold: Die Colloiden in Biologie und Medizin, Dresden, 1912.
- ² Turck: International Medical Congress, 1909, Sec. 3, p. 196.
- ³ Turck: Sect. on Experimental Pathology and Therapeutics. Berlin, 1910.
- ⁴ Turck: Transactions of the American Gastroenterological Association, 1914.
- ⁵ Turck: Journal of Medical Research, 1908, xvii, No. 4.
- ⁶ International Medical Congress, Lisbon, 1906.
- ⁷ Turck: British Medical Journal, April 20, 1907.
- ⁸ Pathological Changes in Venous Walls, Due to Fatigue. Literature:
 - Amshelov: Ziegler's Beiträge, 1912, li, 379.
 - Aschoff: Verhand. d. d. path. Gesell., 1910, xiv, 123.
 - Dmitrieff: Ziegler's Beiträge, 1897, xvii, 207.
 - Fischer: Ziegler's Beiträge, 1900, xxvii, 207.
 - Hallenberger: Dent. Archiv. f. Klin. Med., 1906, lxxvii, Hft. 1, 2.
 - Ignatichewski: Virchow's Arch., 1909, 197.
 - Jores: Arteriosklerose, Bonn, 1903.
 - Idem: Cyt. f. path. Anat., 1902, xiv, 665.
 - Klotz: Jour. Exp. Med., 1905, xxviii, 632.
 - Idem, Jour. Med. Research, 1914, xxx, 373.
 - Moenscheberg: Virchow's Archiv., 1903, 141.
 - Ribbert: Verhand. d. d. path. Gesell., 1904, vii.
 - Salgiew: Verhand. d. d. path. Gesell., 1910, 140.
 - Virchow: Cellular Pathology, New York, 1858, 280.
- ⁹ Turck: Medical Treatment of Gastric and Duodenal Ulcer, Medical Record, June 24, 1916.

Reports of Societies.

NEW ENGLAND PEDIATRIC SOCIETY.

A combined meeting of the Pediatric Section of the New York Academy of Medicine, the New York State Society, the New Jersey Pediatric Society, the Philadelphia Pediatric Society and the New England Pediatric Society was held in Boston on Saturday, November 4, 1916.

The program for the day was as follows:

- 8.45 A.M. Assemble at the Harvard Club.
 9-9.30 Massachusetts General Hospital.
 Problems in Metabolism—Dr. Fritz B. Talbot.
 10-10.30 Boston Dispensary.
 Clinical Cases, with special reference to Feeding—Dr. Maynard Ladd.
 11-11.30 The New England Home for Little Wanderers.
 The Problem of the Delicate Child—Dr. W. R. P. Emerson.
 11.45-12.30 Children's Hospital.
 Clinic by Dr. John Lovett Morse.
 12.30-1.30 The Infants' Hospital.
 Intraspinal Injections—Drs. Dunn, Howell, Grover.
 The Baby Hygiene Association—Dr. J. Herbert Young.
 1.30 Luncheon at the Harvard Medical School.
 2.00 Massachusetts School for Feeble-minded at Waltham.
 Clinic by Dr. Walter E. Fernald, Superintendent of the School.
 6.30 Dinner at the Harvard Club.
 8.15 Meeting in John Ware Hall, Boston Medical Library.

The following papers were read:

1. Medico-Educational Problems in the Treatment of Atypical Children—G. Hudson Makuen, M.D., Philadelphia, Pa.
2. Intestinal Venous Stasis: Diffusion of Bacteria and other Colloids—Fenton B. Turk, M.D., New York.²
3. The Epidemiology of Bacillary Dysentery—W. G. Smillie, M.D., Boston.

EPIDEMIOLOGY OF BACILLARY DYSENTERY.

(Abstract.)

DR. WILSON G. SMILLIE, Boston: The cause of bacillary dysentery is well known, and its treatment has received careful study, but the mode of transmission of the disease has not excited much interest. The Floating Hospital of Boston studied its cases of bacillary dysentery during the summer of 1916 from the point of view of the origin of each case, in order to find nests of infection in the city, and to discover the important factors in the transmission of the disease.

The cases were studied (1) from the community point of view, a record being kept of temperature, humidity, and other factors affecting all individuals. (2) Neighborhood conditions were studied by means of daily records of all reported cases of the disease, in order to expose nests of infection in various parts of the city. (3) The family condi-

tions of each case were studied by means of a Housing Score Card, similar to the familiar dairy or market scorecard. (4) Finally, the activities of each individual case for a period of 10 days before symptoms developed were investigated, in order to discover if possible the source of infection.

No relation was apparent between the case incidence of the disease and high temperature and humidity. The incidence seemed to follow the fly curve more closely than it did the temperature curve.

Several nests of infection were discovered in various parts of the city, notably in South Boston. It is concluded that unsanitary conditions may exist without dysentery, but poor housing conditions are a fertile soil for the development of the disease. The disease was more common among the children of American and first generation parents than among foreign parents, probably because the foreigners more frequently nurse their infants.

The source of infection of seventy-five cases was studied. The etiology of these cases was as follows:

Contact with an acute case	21
Contact with a carrier	2
Contact with a house case	4
Condensed milk epidemic	15
Ice cream	9
Flies	6
Milk	1
Water	1
Fruit	1
Unknown	15

Of the 21 cases due to contact with an acute case, eight were adults; the remainder were older brothers and sisters in the family. As a rule, the course of the disease in the older children was mild, and none of these cases died. In several instances, however, a mild adult case transmitted the disease to an infant of the family with rapidly fatal results.

There was one epidemic of dysentery which seemed to be due to the use of a cheap brand of condensed milk. Fifteen children were infected between the middle of July and the middle of August. The cases were from all parts of the city, some in isolated communities, and had but one factor in common: the use of S brand of condensed milk. In most instances, it was the only food the child had.

Ice cream cones of the cheap "penny horn" type were responsible for 9 cases of bacillary dysentery. These cases were in older children, and the epidemiology is less definite, but in each case the ice cream factor was very suggestive. In one instance, dysentery bacilli were isolated from a sample of ice cream that had been the source of infection of at least two cases of the disease.

A Shiga epidemic of dysentery was traced from one community to another and gave the best single example of the mode of introduction and transmission of disease in the community. The disease began with an ice cream infection, was transmitted by contact to a dairymaid, thence through milk to a fresh-air summer camp. Twenty-two children were infected by the milk and were all sent home. One of these children came to her home in an unsanitary Boston suburb and transmitted the disease to her brothers and sisters by contact, and to

the neighbors by means of flies and an intermediary carrier.

It was concluded that bacillary dysentery is frequently spread by means of contact with an acute case, or a carrier; and by means of food, as milk, condensed milk and ice cream; by water, and by flies. The sporadic type of summer dysentery of infants is often transmitted to older children and adults, but, as a general rule, the older the child, the milder the disease.

DISCUSSION.

DR. BOWDITCH: I have not much to add to Dr. Smillie's report, except to say that as he has begun the work, so I hope that he will continue it. He has been able to accomplish that which another person, not initiated, would be unable to do without much stumbling. The handling of the parents was a delicate task, to say the least. Through the co-operation and the help of Mr. Norbury, our bacteriologist, Dr. Smillie was materially assisted in drawing his conclusions, and presenting these interesting facts.

I thought you might be interested, in connection with Dr. Smillie's paper, to hear what has been the result of our bacteriological findings during the past three summers. We are especially interested, as you know, in the bacteriological side of these dysenteries. I will therefore give a short résumé.

In 1914 there were 79 cases; in 68% the Flexner organism was discovered. In 1915, 75 cases, 86% of which gave the Flexner infection. In 1916, 64 cases. Dr. Smillie has a few to add on the outside which did not come to the wards. Of the 64 cases that were in our wards, 88% showed the Flexner infection. In 51, or about three-fourths of these cases, the bacteria were recovered in the stools. The others were recovered at autopsy, and a certain few were diagnosed through the finding of agglutinins. At the same time that we carried on the investigation we studied the occurrence of the B. welchii to see what influence, if any, it had. During these three years we discovered that the B. welchii did not apparently play an important part.

In 1914 a close bacterial investigation was carried out, and the B. welchii series was studied in infectious diarrheas, as well as in indigestion, malnutrition and normal cases. Six to 11% reactions were found among the infectious diarrheas, 27% in the digestive cases, 28% in the malnutrition cases, and 38% in the normal cases. The infectious diarrhea cases were studied carefully and thoroughly. The other cases, of indigestion, etc., were picked at random. Our feeling about this problem has changed in 29 cases. We now feel that the Flexner organism is the main etiological factor in these cases of dysentery; that the gas bacillus is a complicating organism and probably not the etiological factor in this disease.

The treatment that we carried out on the boat this year was the following. After an initial cathartic, unless contraindicated, we fed our cases (clinical picture of dysentery) on water for the first twelve hours, then fed them on high carbohydrates, provided they did not react to the gas bacillus infection.

If the gas bacillus infection did occur, we gave the child buttermilk and cut down on the carbohydrates. The results were uniformly gratifying. Out of the 64 cases we lost a very small proportion—the exact per cent. I do not know at present.

Workingmen's Compensation.

SPECIFIC PAYMENTS UNDER THE WORKINGMEN'S COMPENSATION ACT.*

DUTY OF PHYSICIAN IN GIVING NOTICE.

By FRANCIS D. DONOGHUE, M.D., BOSTON,

Medical Adviser of the Massachusetts Industrial Accident Board.

THE Workingmen's Compensation Act will well repay careful reading and study.

As the accidents under the compensation act occur in every nook and corner of the Commonwealth, it is necessary for every doctor to understand the operations of the law that affect his interest or affect the interest of those who may come under his direct control or care.

It is apparent that all physicians do not understand some of the very important parts of the Act. First, the portion of the Act that governs the payment of specific compensation for specific injuries independent of the disability that results from the accident itself, and the second portion, the duty of giving notice that the right of the man or the physician may be safeguarded.

An important part of the law, which should be given careful consideration by the medical profession because it has to do with the rights of the man for specific compensation, reads as follows:

(Section II, Part II):

"In case of the following specified injuries, the amounts hereinafter named shall be paid in addition to all other compensation:

"(a) For the loss by severance of both hands at or above the wrist, or both feet at or above the ankle, or the loss of one hand and one foot, or the reduction to one-tenth of normal vision in both eyes with glasses, sixty-six and two-thirds per cent. of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of one hundred weeks.

"(b) For the loss by severance of either hand, at or above the wrist, of either foot at or above the ankle, or the reduction to one-tenth of normal vision in either eye with glasses, sixty-six and two-thirds per cent. of the average weekly wages of the injured person, for each hand or foot so severed, but not more than ten dollars nor less than four dollars a week, for a period of fifty weeks.

"(c) For the loss by severance at or above the second joint of two or more fingers, including thumbs of the same hand, or of two or more toes of the same foot, sixty-six and two-thirds per cent. of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of twenty-five weeks for each hand or foot so injured.

"(d) For the loss by severance of at least one phalange of a finger, thumb, or toe, sixty-six and two-thirds per cent. of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of twelve weeks for each hand or foot so injured.

"(e) The additional amounts provided for in this section in case of the loss of a hand, foot, thumb, finger, toe, or phalange, shall also be paid

* Abstract of remarks at the Annual Dinner of Court Physicians, M. C. O. F., Feb. 13, 1917.

for the number of weeks above specified, in case the injury is such that the hand, foot, thumb, finger, toe or phalange is not lost, but so injured as to be permanently incapable of use."

The wording in the section providing for additional compensation for specific injuries went into effect on October 1, 1914, and the last paragraph is most important, where it provides that in case the injury is such that the "hand, foot, thumb, finger, toe, or phalange, is not lost, but so injured as to be permanently incapable of use," materially changes the law as it stood prior to that time.

One of the cases bearing on specific compensation under the law decided by the Supreme Court, was the *Floccher* case. The decision is so important that I quote it in full:

"Frank Floccher, Employee.

Joseph V. Floccher, Employer.

Fidelity & Deposit Company of Maryland, Insurer.

Decision of the Supreme Judicial Court on Appeal.

PIERCE, J. The right of the claimant to receive a payment of \$10 a week for total incapacity is admitted, and such payments have been made from week to week as they became due.

The insurer does question that part of the decision which allows the claimant specific compensation for fifty weeks at \$10 a week, for permanent loss of the right arm (hand), under the provision of the Workmen's Compensation Act, St. 1911, c. 751, Part II, Sect. 11, as amended by St. 1914, c. 708. This amendment provides that the additional amounts to be paid 'in case of the loss of a hand, foot, thumb, finger, toe or phalange is not lost, but so injured as to be permanently incapable of use.'

This statute, so far as quoted, puts in implicit form the law as to the permanency of the injury assumed in *Meley's Case*, 219 Mass. 136, to be the reasonable construction of the words 'incapable of use,' as set down in St. 1911, c. 751, Part II, Sect. 11, as amended by St. 1913, c. 445. The words 'incapable of use' should receive a construction which, while fairly within their interpretation, is not narrow and technical, nor, on the other hand, so free and liberal as to give a right which the words themselves do not fairly import.

In the case at bar, for practical purposes, the ability to use the hand to the extent of a small amount of motion in the thumb and first finger, with the middle, ring and little fingers paralyzed, and with an interference of the circulation to such a degree that the hand goes to sleep, is negligible. The use approaches the infinitely small, and must be disregarded if we are to prevent the technical impairment of a humane provision of law. (*Meley's Case*, *supra*).

But it is said that an operation will aid the improvement of the thumb and forefinger by making them more accessible, and thereby leading to their being more used. If the claimant is not to be employed to unusual risk and danger arising from the anesthetic to be employed, or from the nature of the proposed operation, it is the claimant's duty to submit, if it fairly and reasonably appears that the result of such operation will be a real and substantial physical gain. (*Tutton's Case*, 1909, 2 K. B. 54; *O'Neill v. Brown & Co., Ltd.*, 1913, S. C. 653).

Does it appear that the result of an operation upon the claimant will be a real and substantial

gain? At present the elbow of the claimant's right arm is permanently gone, the right hand, save 'a small amount of motion in the thumb and first finger,' is paralyzed, and there is 'interference of the circulation, so that he has a hand that goes to sleep.' The operation proposed is to place the arm, under ether, in a right angle and then have the arm set. This leaves the elbow permanently impaired, but gives the arm a wider field of motion than when hanging at the side.

Dr. Donoghue said:

It will be a long while after the operation before he will acquire the use of his arm. You could not make any prognosis of it. . . With his arm at a right angle he would be able to do certain things. . . He could not do much at the end of a long, stiff arm. . . An operation would give him a stiff arm at a right angle, but he could button his clothes, or get his hand to his mouth, and he would be able to use it for various purposes which he could not do with it by his side. He would have a more useful arm bent in a right angle than he has at present, and one that he could use to do some work with. . . It is simply a question of impairment. It would be less impaired in a right angle than where it is. It would be pretty close to being permanently incapacitated for use, even after this operation.

Upon the testimony it could be found that it was pure speculation whether the hand ever would become in any normal sense a useful member.

No attempt was made to fix the limit of time within which the partial relief of the hand's total incapacity would become manifest, save that no prognosis could be made.

It well may be asserted that it would be unreasonable to put the claimant at least to the discomfort attending an operation the result of which would be the probability of a 'shoulder stretched out' and of 'muscles used up,' and in addition doubt as to the time within which some uncertain and indeterminate degree of benefit reasonably might be expected. The finding that the right hand 'is permanently incapable of use' was warranted, and no error of law appears. (*Herrick's Case*, 217 Mass. 111; *Meley's Case*, 219 Mass. 136.) The decree of the Superior Court must be affirmed.

So ordered.

May 20, 1915."

Another case bearing upon what should be considered total disability, is the case of *Ernest J. Lemieux vs. Contractors Mutual Liability Insurance Company*. The following is an abstract of the decision of the Supreme Court:

The employee sustained an injury which necessitated the amputation of all the fingers of the hand and the internal loss of bone structure, as indicated by x-ray photograph. The medical evidence, as well as the inspection of the member, showed that the hand had no use as such. The insurer claimed that, because the claim for compensation as filed did not allege the permanent incapacity of the hand, and the Board had approved an agreement for the payment of additional compensation for a period of twenty-five weeks on account of the "loss of three fingers," no further additional compensation was recoverable.

A hearing was had before the committee of arbitration upon the single question, "whether the injury was such as to render the hand permanently incapable of use." The employee and the insurer

were represented by counsel and, so far as appears, the hearing was held without objection. The committee found "upon all the evidence that the employee received personal injury. . . by reason of which his right hand was rendered permanently incapable of use."

This finding was affirmed by the Industrial Accident Board upon a review of the evidence, and was warranted by the visible external physical condition of what remained of a hand, as also by the internal loss of bone structure as shown by x-ray photograph; by the testimony of the employee as to how he could use it; and by that of the physician, who concluded his testimony with the statement that "the hand has no use as a hand." (Meley's Case, 219 Mass. 136; Flocher's Case, 221 Mass. 54.) There being reasonable evidence to support this finding, it is conclusive. (Herrick's Case, 217 Mass. 111; Sponatski's Case, 220 Mass. 526, 530; Burns' Case, 218 Mass. 8.)

Specific Compensation for Eye Injury. In regard to specific compensation for the lowering of vision below one-tenth, there have been a number of cases decided by the Board, none of which have been passed upon by the Supreme Court, but it is the feeling of the Board that in a case where the vision can be restored after an accident by a very powerful lens, and with that powerful lens it is impossible to use the injured eye with the uninjured, they have held that that is not a practical vision which comes under the meaning of the Act where specific compensation should be paid. In other words, function of any part of the body should be restored in a practical sense rather than a theoretic.

Partial Compensation. One portion of the law with which the doctors and the workmen are not familiar is Section 10, Part II, which provides for payments during partial incapacity, and which reads as follows:

"While the incapacity for work resulting from the injury is partial, the association shall pay the injured employee a weekly compensation equal to sixty-six and two-thirds per cent. of the difference between his average weekly wages before the injury and the average weekly wages which he is able to earn thereafter, but not more than ten dollars a week, and in no case shall the period covered by such compensation be greater than five hundred weeks from the date of the injury, nor the amount more than four thousand dollars."

The importance of this section is this: a man who has made a partial recovery can go to work and get partial compensation. He does not lose any rights by going to work, for if it is found after a reasonable attempt is made at work that he no longer can continue by reason of disability resulting from his employment, he then goes back upon total incapacity payments.

Under the old law, when a man went to work, it was sometimes considered that his rights had ceased, but under the new law his rights are still held, and there is no way that his rights can be taken away from him by the signing of a settlement receipt except by what is known as a lump sum payment which must be approved by the full Board.

The ordinary settlement receipt which the injured man is called upon to sign, does not take away his rights at all, so that he can at any time, when disabled, come in and claim his rights. If the doctors fully understood this section, I am con-

vinced that there would be many cases that would be encouraged to go to work as a curative measure a good deal earlier than they are now.

Importance of Notice. To preserve the immediate as well as the future rights of an employee and the rights of the doctor, it is well to see that a proper legal notice is given in each accident case. If the doctor is in doubt, he should see to it himself that some notice is given as provided by the following sections of the law.

Part II, Section 15:

"No proceedings for compensation for an injury under this act shall be maintained unless a notice of the injury shall have been given to the association or subscriber as soon as practicable after the happening thereof, and unless the claim for compensation with respect to such injury shall have been made within six months after the occurrence of the same; or, in case of the death of the employee, or in the event of his physical or mental incapacity, within six months after death or the removal of such physical or mental incapacity."

Part II, Section 16 (as amended by Chapter 172, Acts of 1912, and Section 3 of Chapter 571, Acts of 1912).

"The said notice shall be in writing, and shall state in ordinary language the time, place and cause of the injury, and shall be signed by the person injured, or by a person in his behalf, or, in the event of his death, by his legal representative, or by a person in his behalf, or by a person to whom payments may be due under this act or by a person in his behalf. Any form of written communication signed by any person who may give the notice as above provided, which contains the information that the person has been so injured, giving the time, place and cause of the injury, shall be considered a sufficient notice."

Part II, Section 17:

"The notice shall be served upon the association, or an officer or agent thereof, or upon the subscriber, or upon one subscriber, if there are more subscribers than one, or upon any officer or agent of a corporation if the subscriber is a corporation, by delivering the same to the person on whom it is to be served, or leaving it at his residence or place of business, or by sending it by registered mail addressed to the person or corporation on whom it is to be served, at his last known residence or place of business."

Part II, Section 18:

"A notice given under the provisions of this Act shall not be held invalid or insufficient by reason of any inaccuracy in stating the time, place or cause of the injury, unless it is shown that it was the intention to mislead and the association was in fact misled thereby. Want of notice shall not be a bar to proceedings under this Act, if it be shown that the association, subscriber, or agent had knowledge of the injury."

In the administration of the law, there has been dissatisfaction among physicians as well as among employees. The kind of treatment given when the injured person is referred to an open hospital outpatient clinic. This was brought to the attention of the Industrial Accident Board, and the position of the Board is stated in a ruling of January 2, 1917, which reads as follows:

"To All Insurers:

The following is a copy of the ruling issued by

the Board as the result of a conference upon the petition of certain members of the medical profession, in regard to the matter of furnishing hospital treatment to injured employees under the Workmen's Compensation Act?

The Industrial Accident Board is in receipt of the following 'protest' from various members of the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, to the number of several hundred:

"The undersigned medical men wish to protest against the practice of a certain few insurance companies of referring their cases to open hospitals and clinics. If the patients go there themselves, well and good, but to 'furnish' medical care by referring the patient to a charity is virtually telling him to go take care of himself; it gives him no care or privilege whatsoever, which is not the intent of the Act, as we understand it.

We refer this question to your honorable body with the request for a ruling as to whether such reference can be considered adequate care within the meaning of the Act."

After hearing representatives of the physicians and the insurers, the Industrial Accident Board states its position on the matter to be as follows:

The Board does not approve of the practice, if it exists, of insurance companies in referring cases to open hospitals and clinics, unless insurers have previously made arrangements with such hospitals and clinics for the furnishing of treatment to injured employees.

To 'furnish' treatment within the meaning of the Act imports, in the opinion of the Board, something more than a mere direction to an employee to go to an open hospital or clinic. It requires that the insurer shall make adequate arrangements for the care of those to whom the duty is owed in the event of injury. Such an arrangement between insurer and the hospital would imply that the hospital is prepared to give the injured employee reasonable services; and in any case where the adequacy of such service, arranged for between the insurer and the hospital is questioned, it will be considered by the Board on its merits."

Book Reviews.

Handicrafts for the Handicapped. By HERBERT J. HALL, M.D., AND MERTICE M. C. BUCK. Illustrated. New York: Moffat, Yard and Company. 1916.

This book, by the authors of "The Work of Our Hands," aims to be a text-book of simple handicrafts to be used to train the partly incapacitated to perform some sort of lucrative labor. It is the belief of the authors that many handicapped persons, both in and out of institutions, may be assisted to earn, or help to earn, their livelihood by means of a knowledge of a simple and useful handicraft. The therapeutic value of suitable occupation to the nervous in-

valid and the convalescent has been ably demonstrated long since, and Dr. Hall's influence and example have been potent in the establishment of workshops in institutions and sanatoria of all kinds. It is but a step further to provide suitable facilities for training the permanently disabled in useful occupations which can be adjusted to their limited capacities. The book, a volume of 155 pages, presents in simple language, free from technical terms, an exposition of the rudiments of various kinds of handiwork,—basketry, chair seating, netting, weaving, bookbinding, cement working, pottery making and light blacksmithing, giving a chapter to each, and including appropriate illustrations of tools, stitches, etc. The appendix consists of a list of books on crafts and a list of dealers from whom materials can be purchased. The book will, without doubt, be of much practical helpfulness to all who are interested in teaching and performing work of this character.

The Diseases of Infancy and Childhood. For the use of students and practitioners of medicine. By L. EMMETT HOLT, M.D., Sc.D., LL.D., Professor of Diseases of Children in the College of Physicians and Surgeons (Columbia University), New York; Attending Physician to the Babies' and Foundling Hospitals, New York; Corresponding Member of the Gesellschaft für Innere Medizin und Kinderheilkunde, Vienna, and Honorary Member of the Gesellschaft für Kinderheilkunde, Germany; and John Howland, A.M., M.D., Professor of Pediatrics in the Johns Hopkins University, Baltimore; Director of the Harriet Lane Home; Pediatrician-in-Chief to the Johns Hopkins Hospital; Corresponding Member of the Gesellschaft für Innere Medizin und Kinderheilkunde, Vienna. Seventh Edition, fully revised, with two hundred and fifteen illustrations. pp. 1180. New York and London: D. Appleton and Company. 1916.

This, the seventh, edition of Dr. Holt's work on the diseases of children, maintains the high standard of previous editions. It is now, as it has been ever since the first edition appeared, the best single book on the diseases of children in the English language. Some other books approach it in value, but none excel it.

The book has been thoroughly revised and reprinted from new plates in this edition. There are a number of new articles and many of the chapters have been entirely rewritten.

No physician or student can afford to be without this book. There are others which he needs, but he must have this one.

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TROOP DISEASES.

THE mobilization and concentration of large numbers of troops presents to medicine just as much a new problem as it does to military organization, to economic, moral and social life. All the other problems are, however, in a manner adjective to the soldier's activities but the medical problems go to the very root of the individual's life—of his activities, as well as to the life of the community in which he must live during mobilization and after demobilization. The health of the soldier must be conserved not only for military purposes but to render him efficient in civil life afterwards. Modern science has by now rendered it possible to assemble troops on a large scale without the heretofore extraordinary mortality from the concentration alone. In most previous wars the general casualty from disease was much larger than that from the military operations themselves. It is

now the primary duty of the medical and sanitary organizations to find out all the dangers of locality and, where there is no choice, to render the place as fit as possible for occupation.

Aside, however, from the diseases to which troops are more likely to fall heir, there is an important communal disease element when such troops are billeted among the populace. Because of concentration most communicable diseases can get a better foothold and attain epidemic proportions very readily, although the good physical condition of the trained soldier tends somewhat to neutralize this tendency.

In Europe the most common troop disease spread to the populace was typhus. It is spread through the body louse and is, of course, the direct result of inability to cleanse properly the body in modern trench warfare. This disease seems to be endemic in many places under mild and usually unrecognized forms, only to break out in virulent form under appropriate provocation. This disease is very common in Mexico. In the United States a mild form was for a long time known under the name of its observer, "Brill's Disease," until identified by Anderson and Goldberger of the United States Public Health Service.

Almost universal vaccination against smallpox has practically eliminated this heretofore terrible scourge.

Modern anti-typhoid vaccination and water purification has taken the edge from typhoid. The epochal results achieved by this method on the Mexican border must ever redound to the ability of the medical men of this country.

Measles is a very common epidemic among troops. It has long been known to be a particularly serious disease and stubborn epidemic among primitive peoples. Since the knowledge that it is the catarrhal and not the desquamating period that is the contagious stage, very successful preventive work can be carried out with this disease.

The most recent medical problem that must be dealt with among troops is epidemic cerebrospinal fever. This disease has long been recognized as a troop disease. Even in the Middle Ages there are fleeting references made to it in the medical literature. Great Britain has suffered a great deal from this disease among her troops, especially with those troops from Canada. Previous to the war this disease was a rarity in England, but now a great deal of it was found

among billeted troops and among the population thereabout (Horder). And, while the out-and-out cases could be easily diagnosed, so many of them were mild, rapidly fulminant or conforming to no type that diagnoses could not be made. Most of the cases presented at the onset only "influenzal" symptoms or during a short course had no other definite symptomatology. Only cultures from the throat or lumbar puncture would establish the correct diagnosis. But it can be seen that these very mild and uncharacteristic disease types, which go unrecognized and against which no preventive measures are taken, are more dangerous to a community than the characteristic manifestations.

The various diseases and conditions that have a special hold during the concentration of troops among a community make it incumbent upon the medical public to cooperate with the military medical men to discover and to control disease among troops, not alone for the sake of the military units, but as well as for the safety of the community among whom these troops must perforce remain. Probably the greatest of permanent benefits arising from war is the opportunity and the impetus given to preventive medicine and to epidemiological studies.

THE ETIOLOGY OF GOITROUS CONDITIONS.

THE etiological conditions at the bottom of such of the goitrous conditions as are exemplified by the simple enlargement of the thyroid gland, by cretinism, by myxedema and by exophthalmic goitre are still but very little understood. Even the great amount of experimental work recently undertaken has helped to clear up the mysteries to a small degree only.

Goitre and the allied conditions have a wide distribution throughout the world. They are endemic in certain parts of the United States. They are fairly common in the Great Lakes region and in certain parts of West Virginia. Their greatest area of distribution is, however, in the Alpine section of Europe. In general, there seems to be a limitation to temperate and subtropical regions; and there is a marked association with mountainous regions and formations. Moreover, in the West Virginia sections Clark (Public Health Reports, No. 184) found that from 9 to 13 *per centum* of the pupils ex-

amined had thyroid enlargement. But, very strangely, he found no cretins among them. Indeed, in this country, it is the experience, even in heavy goitrous sections, to find very little cretinism. In the endemic sections of Europe, however, the percentage of cretinism is very large. It is for this reason that there is quite a public health problem involved in immigration from these sections of Europe. There is no proof, nevertheless, that goitrous conditions are hereditary. Their apparent lineal nature is due to continuous residence in affected localities.

It was fairly well accepted that goitre is a water-borne condition, yet no investigator has yet been able to point definitely to any element that might justly be indicted. The development of the thyroid conditions is most common in the spring and autumn seasons. It must be remembered that during these seasons there is the greatest likelihood of water containing suspended matter being consumed, and, while this fact would seem to bear out the pollution theory, it has been found that the installation of water purification works, as was done in the case of the city of Vienna, Austria, had no effect to reduce the incidence of goitre. It was thought barely possible that polluted water might yet act indirectly in this respect by furnishing the necessary medium for the development of the exciting agent. Susceptible individuals develop the disease after a few weeks' residence in affected regions but are rapidly cured after removal therefrom. It has been found, further, that in such districts where safe and unsafe water are used only those who consume the unsafe water develop thyroid enlargement.

For a time hard water was blamed for the development of these conditions, but if it has any influence at all it seems to be rather an indirect one than an actual causative condition. It merely favors it under appropriate conditions. Goitrous water has a high bacterial content, and, for this reason, a living agent was thought to be at the bottom of the enlargement. This theory was much encouraged by the fact that boiling water thus affected or filtration through a Berkefeld filter rendered such water safe. Later on the theory was advanced that minerals having a high radioactivity predisposed to its development, and still later it was thought that the remains of ancient marine animals caused the condition. In any event the chemical and even

the bacteriological content of water depended largely upon the geological formation—upon the nature of the soil and upon the nature of the rock formation. Goitre is extremely common in localities with dolomite formations. It is extremely rare in other formations, although if other rock formations are very thin the water seeping through them may, nevertheless, become unsafe. It is, then, common in regions underlaid by the Silurian, Carboniferous and Permian systems; it is rare over crystalline or eruptive formations. It is likewise rare over fresh deposits.

A very plausible theory more recently advanced is one in which it is set forth that, on the whole, goitrous water lacks certain chemical elements necessary for human economy—particularly iodine, and, indeed, in these hypertrophied thyroids, there is little of it present. In experiments with goitrous fish the addition of iodine, in the form of Lugol's solution, has effected speedy cures. In man the experiments have not been sufficiently tried out to warrant definite conclusions, but the results are, nevertheless, significant.

And, finally, there is a great deal of speculation and some experimentation that these conditions must be ascribed to faults in internal secretion. There is hope when the entire subject of the internal secretion has been more thoroughly developed that thyroid conditions will be found among them.

OCCUPATIONS TO BE ENTERED ON DEATH CERTIFICATES.

In a recent circular letter to physicians, Samuel L. Rogers, Director of the Bureau of the Census, Washington, asks that more accurate and definite statements of the occupations of decedents be written upon death certificates. Although such entry is not now required by law, it will prove of great value in public health work and in the gathering of statistics for future tabulation and use, especially in mortality statistics by occupations. For instance, the Bureau of the Census is planning to issue in the near future a monograph on tuberculosis. How much more valuable this monograph will be if it is possible to show accurately the occupations of the decedents.

The JOURNAL would bespeak the coöperation

of all its readers in entering on every death certificate they are called upon to sign, the exact occupation of the decedent, so far as possible.

NOTICE TO PHYSICIANS.

AS A MEASURE OF PREPAREDNESS and, incidentally, as a health measure, *every* physician is requested to read the following notice regarding antitoxin bottles. PLEASE COMPLY WITH THIS REQUEST TODAY.

"Owing to war conditions, the State Department of Health finds a growing difficulty in obtaining supplies for the manufacture and distribution of diphtheria antitoxin and vaccine virus. There is, in particular, a shortage of bottles for antitoxin. All physicians throughout the State are, therefore, urgently requested to search for antitoxin bottles and return them to the Antitoxin and Vaccine Laboratory, Forest Hills, Massachusetts."

MASSACHUSETTS MEDICAL PERSONNEL

THE Joint Voluntary Committee on Medical Personnel for Massachusetts desire to make a brief report to the profession in relation to the card catalog of physicians of Massachusetts. About five thousand eight hundred cards have been sent out. This includes all names on the present registration list in Dr. Bowers' office. A little more than three thousand cards have been returned. More than one thousand three hundred individuals have also sent subscriptions in amounts varying from ten cents to considerable sums. The total received at present approximates nine hundred dollars. The Committee are deeply grateful for the generous subscriptions, and look forward to the possibility of an even thousand dollars total. They again wish to thank cordially all the subscribers, and once more ask most earnestly that the twenty-five hundred cards which are lacking may be returned just as soon as possible.

J. B. BLAKE, *Chairman*,
A. B. EMMONS, 2d, *Secretary*,
For the Committee.

MEDICAL NOTES.

RESULTS OF HEALTH SURVEY IN WEST VIRGINIA.—The Metropolitan Life Insurance Company has prepared a preliminary statement of the results of its health census taken in the

state of West Virginia during the first two weeks of March, 1917. Agents of the Company ascertained the state of health of nearly 46,000 persons in the leading cities of the state and found that 1,504 persons were sick in this group. This gives a sickness rate of 33 per 1000, or one sick person in every thirty of the population enumerated. Sickness rates prepared for other communities by the Metropolitan usually run from 20 to 25 per 1000. More sickness was found among coal miners than among other persons interviewed. The diseases and conditions enumerated by the agents taking the survey are of decided interest. Influenza was the leading disease enumerated, 226 cases, or 15.0% of all sicknesses, being so reported. Rheumatism was the disease next in importance, with 122 cases, or 8.1%. Whooping cough was found in 83 cases, or 5.5%. Diseases of the stomach were registered in 55 cases, or 3.7%; organic diseases of the heart in 50 cases, or 3.3%; tuberculosis of the lungs in 48 cases, or 3.2%; and measles in 47 cases, or 3.1%.

COMMUNITY HEALTH IN PITTSBURGH.—During the weeks of March 12 and March 19, 1917, the Metropolitan Life Insurance Company, with the cooperation of Dr. J. F. Edwards, Director of Public Health, conducted a health census of the city of Pittsburgh and in a few immediately adjacent towns. The health status of a little more than 127,000 persons was ascertained and 2,039 sick persons were enumerated. This number of persons enumerated is 22% of the total population of the city of Pittsburgh. It is especially important to know that this representative portion of the general population of Pittsburgh included a large number of men, women and children of the wage-earning classes. The sickness rate was 16 per thousand, or one sick person in every 63. Final conclusions cannot be drawn from the findings, however, until a further study of the figures is submitted in a final report. This health census has made it possible to discover the sickness rates of the more important industrial groups in the city of Pittsburgh. Among employees in the iron and steel mills the sickness rate was 20 per thousand, and among the glass factory workers it was 19 per thousand. These figures are but slightly higher than the sickness rates for the general group of the population enumerated and do not indicate any distinctly unfavorable health conditions. White persons showed a lower sickness rate (16 per thousand) than did colored persons (18 per thousand). The principal diseases enumerated in Pittsburgh were accidents and injuries which constituted 9.7% of the cases; rheumatism, with 8.3% of the cases; influenza, with 7.6%; pneumonia, with 5.7%; colds, coryza and rhinitis, 4.3%; tuberculosis of the lungs, 4.1%, and diseases of the stomach, 4.0%. In general, the findings for diseases and conditions among persons enumerated in the city of Greater Pitts-

burgh are very much the same as the average figures for the entire state of Pennsylvania, and indicate no special circumstances.

DECLINING BIRTH RATES IN SCOTLAND AND FRANCE.—A recent issue of the *Medical Press and Circular* reports an address made at a meeting in Edinburgh on January 28 to consider the declining Scottish birth rate.

"Councillor Stevenson said when it was stated that the birth rate for Scotland in 1915 touched the lowest point since the institution of national registration in 1855, and that during the last two years, doubtless owing to the effect of the war on the home life of the community, there had been an alarming increase in our infant mortality rate, the gravity of the problem must be patent to all. In 1871 there were 34 children born in Edinburgh for every thousand of the population; in 1915 only 17. In Canongate Ward the rate was 24; in Morningside 10.9. It was among our garden villas where the degeneracy had been developed. It was time the State realized the gravity of the problem—time, too, for the Church to point out the peril towards which we were drifting. Along with the decreasing birth rate there was the high death rate among children before they attained the age of one year. In 1913, the last complete year before the war, the death rate was 109.6 per 1000. The great municipalities for the most part were fully awake to their obligations towards this great problem and Edinburgh had done splendid work. In 1898 the infant death rate of the city was 14.2 per 1000; in 1908 it dropped to 120, and since they had appointed a lady health visitor with 300 helpers, it had fallen steadily to 101. In 1914, with only five months of war, the infant death rate had increased to 110, and in 1915 to 132, a rate which had not been touched for nearly twenty years."

In France a similar condition prevails. Demographic statistics of that country for 1915 show, in the 76 departments which can be accounted for, in 1913, an excess of 15,645 births; in 1914, an excess of 53,327 deaths, and in 1915, an excess of 261,835 deaths. The figures do not represent correctly the births and deaths in the invaded departments in the war zone, where almost all the deaths of combatants are registered.

The present situation of France, as regards its birth rate is quite different from that prevailing in the past. In the issue of *Paris Médical* for December 16, 1916, Dr. Henri Raymond reports the following instance of extraordinary fecundity in a French family of the last century:

"Marie Dehen was born at Monsures in 1847, and bore her first child at the age of 18 and her last at 49. The sum of her contribution to the population of France was thirty-two, of whom eighteen were boys and fourteen girls. Eight of the former and seven of the latter are still alive. The others died in childhood. She had three miscarriages. As her periods did not cease till

she was 60, she might have continued her good work still further but for the death of her second husband. Only at the birth of her first child did she have the assistance of a doctor; his ministrations taught her all she wanted to know, and in all her subsequent confinements she managed for herself. She got up on the day after the happy event and carried the baby in her apron to church for baptism. Her experience has led to her employment as the local midwife, an occupation which she varies with that of tender of cows. Her surviving offspring, though quite healthy, have given no proof of remarkable fecundity, with one exception. A daughter who married at 25 and is now 35, has had ten children in ten years and now awaits the arrival of the eleventh. Marie Dehen is known among her own people as 'the woman with thirty-five children.' The facts may be accepted without question, as they are recorded in the registers of the *Mairie* and the parish."

UNIVERSITY COLLEGE, LONDON.—Next October women medical students will be admitted to the department of anatomy of the University College, London.

ELECTION OF OFFICERS.—The George Washington University Medical Society, composed of the alumni and faculty of the medical school, at a recent meeting, elected Dr. W. Ashby Frankland, president; Dr. Coursen B. Conklin, vice-president; Dr. Thomas Miller, secretary; and Dr. Edward G. Seibert, treasurer.

LONDON DEATH RATES IN 1916.—Statistics recently published show that the total death rate in London in 1916 was only 14.3 per thousand inhabitants living. Among the several districts and boroughs the highest was 18.6 in Finsbury, a crowded central slum, and the lowest was 10.3 in Hampstead, an open suburb on the north.

LONDON DEATH RATES IN FEBRUARY, 1917.—In February, 1917, the total death rate of London was 21.3 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 26.5 in Shoreditch, a crowded east side slum, and the lowest was 16.1 in Hampstead.

SPECIAL GRADUATE COURSE AT SPOKANE, WASH.—A graduate medical course will be conducted at the new St. Luke's Hospital, Spokane, during the summer. Among those whom it is planned to have lecture are Drs. W. T. Councilman, Harvey Cushing, Walter B. Cannon, Fritz B. Talbot, James S. Stone, George Holmes, David L. Edsall and Francis W. Peabody, Boston; William G. MacCallum and Warfield T. Longcope, New York; Llewellyn F. Barker and Theodore C. Janeway, Baltimore; and Rollin T. Woodyatt, Ludvig Hektoen and Harry G. Wells, Chicago.

NATIONAL ACADEMY OF SCIENCES.—At the annual meeting of the National Academy of Sci-

ences, held in Washington, many interesting papers were read and discussed. Dr. Erwin F. Smith, pathologist in charge of the laboratory of plant pathology of the Department of Agriculture, reported the results of his experiments with crown gall in plants to cancer in man.

"Two very important results have been obtained by Dr. Smith within the last sixteen months. The first of these is the discovery of a new type of crown gall tumor, and his ability to reproduce these tumors at will by inoculating plants in particular places. The newer type of plant tumor discovered, according to the investigator, corresponds to the most complex type of malignant tumors in man and animals. The second important phase of his work has been the production of small tumors in the absence of tumor-producing organisms, that is, with chemical products of tumor bacteria, and he believes that this is the first time that experiments have proved tumors were due to chemical products of the bacteria, slowly liberated within the cells of the attacked plant.

"If I am correct in my view that the plant disease under consideration is a cancer, then it throws a flood of light on the unknown or obscure origin of cancers in man and animals, making it practically certain that they are due to parasites, but not necessarily the one I studied. Using the word 'cancer' in the broad sense for all malignant tumors of man, nothing is known at present of its cause. Although they have no other satisfactory way of explaining it, the greater number of cancer specialists have come to the conclusion that it cannot be due to parasites."

Dr. W. V. King, of the Bureau of Entomology, wrote a paper on "How Mosquitoes are Infected by Malarial Parasites."

"Dr. King has made some remarkable discoveries in regard to malarial parasites which infest certain mosquitoes previously thought not to be carriers of disease. His report dealt with some of his experiments conducted in the laboratory of Dr. C. C. Bass, Tulane University, New Orleans, where he is now engaged in work."

Dr. Simon Flexner, of the Rockefeller Institute, spoke on certain mechanisms that defend the body from the attacks of infantile paralysis; Drs. Jaques Loeb and J. H. Northrup, on what determines the natural duration of life; Dr. Frank R. Lillie, of the University of Chicago, on sex-determination and differentiation in mammals.

UNIVERSITY OF OREGON MEDICAL SCHOOL.—A new laboratory, costing \$115,000, is to be erected by the University of Oregon Medical School on Portland Heights. The new site, some twenty acres, was the gift of the Oregon and Washington Railroad and Navigation Company. Its altitude affords a wonderful view of the surrounding mountains and rivers.

WAR NOTES.

CANADIAN PHYSICIANS IN THE WAR.—The work of the Canadian medical profession during the war has shown a standard of efficiency on a par with that of the service rendered by the troops and other agencies of the Dominion. Some details of this work are described as follows in a recent issue of the *Lancet*.

"According to a statement recently issued by Sir Edward Kemp, Canadian Minister of Militia and Defense, the Canadian Army Medical Corps number approximately 1800, of whom 500 are in Canada and the balance serving overseas. A large proportion of those in Canada are carrying on the work of the Canadian Military Hospitals Commission. In addition to the above numbers there are 400 civilian practitioners partly employed in military work in Canada, and over 400 Canadian doctors have proceeded overseas to join the Royal Army Medical Corps. In a short time other physicians in the Dominion desirous of serving will be given an opportunity of assisting in the work of attending invalided soldiers returning to Canada. That work is now to be divorced from the Canadian Hospitals Commission and assumed by the Canadian Army Medical Corps, under the direction of a Director of Medical Services for Invalids, Commission continuing the provision of hospital accommodation as it is needed, and the maintenance and equipment thereof. Colonel Frederick W. Marlow, A. D. M. S., has made an official report to the Militia Department on the general arrangements of the Canadian Army Medical Corps. Travelling all over Canada, Colonel Marlow's work of inspection had a wide scope. His report has been considerably discussed since the Canadian Government made it public property. In general, Colonel Marlow recommends: The completion of the reorganization of the Medical Service, thus bringing the medical branch of the service up to the required standard; the increasing of administrative staffs; the appointment in some districts of officers brought back to Canada from overseas; consideration of the advisability of increasing the Permanent Army Medical Corps for duty in Canada; frequent inspections of all districts and camps, for which purpose the appointment of an inspecting officer would seem advisable; depot units of fixed establishment to replace or supplement the present reinforcement plan, and closer relation between home and overseas service so as to minimize wastage; a plan whereby specialists may proceed overseas without undue delay in Canada; the gradation of officers entering the service, so that experience and special ability will count; the advisability of providing term contracts for service; improvement of laboratory facilities; installation of fumigating plants at camps and military hospitals; close coöperation between the Canadian Hospitals Commission and the Canadian Army Medical Corps; and the establishment of large

hospitals in Halifax, Quebec, Montreal, Toronto, Winnipeg, Edmonton, and Vancouver. One of the recommendations, that of the transference of the returned soldiers to the Canadian Army Medical Corps from the Hospitals Commission, has already been adopted.

MEDICAL PREPAREDNESS AT THE UNIVERSITY OF MICHIGAN.—At its meeting on April 2, 1917, the faculty of the University of Michigan Medical School adopted the following resolutions, which were published in the issue of *Science* for April 20.

"1. It is the opinion of the faculty of the University of Michigan Medical School that in meeting the demands for medical officers in the national service, the military authorities should give first preference for enlistment to the members of the medical classes of the past two years, viz., 1915 and 1916.

NOTE.—These young men have recently finished their medical courses and having taken, in part or altogether, their hospital training, should have the latest and best information in scientific medicine, and not having as yet established themselves in practice, are best fitted to be selected for military service.

2. In view of the probably urgent demands for trained medical men, the faculty of the University of Michigan Medical School desires to place itself on record as being ready and willing to make its courses of instruction continuous through the summers of 1917 and 1918. This proposition will be submitted to the various state boards of licensure for their approval.

NOTE.—If this provision goes into effect, a week after the close of the present session, the session of 1917-18 will begin. Those who are now juniors will become seniors and may be graduated in January, 1918.

NOTE.—In taking this step, not only the military demands upon the medical profession, but civil demands as well, are taken into consideration.

3. Taking into consideration the future needs of the country for trained medical men, it is the opinion of the faculty of the University of Michigan Medical School that it is advisable for the undergraduate medical students to complete their course of instruction and not to enlist.

4. The faculty of the University of Michigan Medical School recommends that not less than two hours per week be set aside for the military drill of undergraduate students, and that, in addition to the ordinary infantry drill, we recommend training along the lines developed by the Clinical Society of Albany, and known as the 'Albany Plan.'

NOTE.—The medical officer should, first of all, be a soldier. This is necessary in order to make him most efficient as a medical officer.

5. That copies of these resolutions be furnished for suggestions of approval or disapproval to the following bodies:

(1) The surgeons-general of the army and navy.

(2) The National Medical Committee on Preparedness.

(3) The National Research Council.

(4) The faculties of other medical schools.

6. That a list of the graduates of the classes of 1915 and 1916, with their standing while in the school and their present addresses, be sent immediately to the surgeons-general of the army and navy."

WAR RELIEF FUNDS.—On May 5 the totals of the principal New England war relief funds reached the following amounts:—

Belgian Fund	\$598,046.57
French Wounded Fund	224,583.54
Armenian Fund	180,623.84
Permanent Blind Fund	108,062.35
French Orphanage Fund	96,584.99
Surgical Dressings Fund	84,127.47
Boston Ambulance Fund	79,564.23
Metropolitan Red Cross Fund ..	57,626.13
LaFayette Fund	26,842.03
Russian Ambulance Fund	6,764.11
Marshal Joffre Fund	3,587.00

BOSTON AND MASSACHUSETTS.

SCARLET FEVER IN SHELBURNE FALLS.—So many cases of scarlet fever, whooping cough and measles are reported in Shelburne Falls that it has been found advisable to close schools.

LEOMINSTER HOSPITAL.—At the March meeting of the executive committee of the Leominster Hospital, the report was made that that hospital is at the present time a self-supporting institution.

LYNN HOSPITAL.—According to the Lynn Hospital superintendent's report for February, the average number of patients was the largest ever reached by the institution.

CONTAGIOUS HOSPITAL IN WORCESTER.—The proposition of establishing a hospital in Worcester for the care of contagious diseases is under discussion, but no definite steps have yet been taken. It was considered possible for the House of Mercy to undertake the construction of an extension or addition, connected by a passageway, which could be used for the care of such cases, but it was not deemed advisable to undertake such a proposition at the present time.

MATERNITY HOSPITAL IN BOSTON.—Mrs. William Lowell Putnam, with the Prenatal Care and Obstetrical Committee of the Women's Municipal League, has urged that a maternity

hospital be instituted for the purpose of caring for women of the middle class who are unable to afford the services of a private institution and who are not in the class with those poor who are admitted to the public wards at the city hospitals and therefore very often do not get the proper care. It was at first proposed that a new building be built, but it has been found that with certain changes in the Boston City Hospital it may be possible to utilize one of the present buildings.

FUND FOR NEW ENGLAND HOSPITAL.—The New England Hospital for Women and Children in Roxbury is conducting a campaign to raise a fund of \$200,000 for the equipping of a maternity department. The constantly increasing demand for accommodation of maternity cases led to the beginning, last year, of a new building adequate to care for 1300 maternity cases a year. The Hospital does not receive state or city aid, and is the only Boston institution conducted entirely by a woman medical and surgical staff. William C. Williams, vice-president of the Boston Safe Deposit and Trust Company, has assumed the chairmanship of the campaign organization. Thomas P. Beal, president of the Second National Bank of Boston, is acting as campaign treasurer. About 200 volunteers are participating in the campaign under twenty-five to thirty team captains. On April 30, \$54,781.21 had been pledged.

TWO ADDITIONAL HEALTH UNITS.—The Boston Board of Health will establish two more health units similar to the one established about a year ago on Blossom Street, West End. The new ones will be established in the old police stations in East Boston and South Boston. \$8500 is appropriated for this purpose.

THE FRAMINGHAM EXPERIMENT.—The residents of Framingham, Mass., have responded to the efforts of the Community Health Committee, and 537 families, or about 1600 persons, have presented themselves for physical examination. So few persons were left in the township that messengers were sent to their homes for them. The examinations were conducted by a staff of fifty physicians, eighteen laboratory workers and twenty-five nurses. Whatever may be discovered of an unfavorable nature will be reported to the person examined. Individuals needing treatment will be referred to local physicians of their own choosing for medical care. In instances where tuberculosis has been discovered, a special effort will be made to see that adequate facilities are provided for thorough medical treatment.

INFANTILE PARALYSIS IN LYNN.—The first death of the year due to infantile paralysis, in Lynn, occurred on April 27. The victim was a girl of fourteen who was a student in Notre Dame Academy, Roxbury.

HEALTH INSURANCE.—The Committee on Social Welfare has reported a resolve in the Senate providing for a special recess committee to investigate further the questions of health and sickness insurance. The committee is to consist of two members of the Senate, four members of the House, and two members to be appointed by the Governor. In recommending this further investigation, the committee state as reasons:—

“We must know to what extent private systems have reduced the amount of time lost by wage-earners.

“What proportion of the wage-earners are at this time benefiting from existing insurance systems.

“Whether they are showing a greater efficiency now than before these systems were established.

“Whether there is agreement between employers and employees as to the workableness of health insurance in this country.

“What the cost will be to the employer, employees and the Commonwealth for the maintenance of a comprehensive system of health insurance.

“What grounds the proponents of health insurance have, for the claim that the movement has been successful in European countries.

“In view of the fact that Norway, Roumania, Russia, Serbia, Great Britain, the Netherlands, Germany, Austria, Luxemburg and Hungary have all adopted compulsory health insurance, and that several state legislatures have authorized a thorough study of the entire subject of social insurance, the opponents of such insurance must produce stronger evidence than any yet offered, to show why Massachusetts may not in the near future seriously consider some form of health insurance, together with maternity benefits and unemployment insurance.

“Much has been said at the hearings which may well lead us to give careful consideration to the words of Governor McCall in his inaugural message.

“If protection against the overtaxing of those engaged in industry can best be secured by the adoption of some system of health insurance, then that is what all of us, as good citizens, should work for.

“If, on the other hand, it is impossible to substantiate claims of those who testified to the success of health insurance in State and country-wide movements, then the Commonwealth may well hesitate to embark on the venture.”

HOSPITAL BEQUEST.—By the will of the late Gustavus J. Peavy, the Mt. Sinai Hospital Society is the recipient of \$1000, and the Boston Society for the Relief and Control of Tuberculosis of \$200.

CAMPAIGN FOR PREVENTION OF INFANTILE PARALYSIS.—The campaign which the Harvard Infantile Paralysis Commission, in coöperation with the State Health Department, is preparing to wage this summer against that dreaded disease, has been materially strengthened by the organization of a large committee of citizens, with Joseph G. Minot as chairman. It is proposed to raise a fund of \$150,000 to finance the campaign. The equipment of the Harvard Medical School laboratories is ready for the preparation of serum or for any other purposes. Local physicians are invited to the clinics at the Massachusetts General Hospital and the Children's Hospital, and large groups of physicians are attending the clinics which have been established in Worcester, Springfield, Lowell, Lawrence, Newburyport, Lynn, Beverly, Malden, Melrose, Quincy, North Adams and Greenfield. Dr. Robert W. Lovett is chairman of the commission; other members are Dr. Milton J. Rosenau, Dr. Francis H. Peabody, and Roger Pierce, secretary. Subscriptions to the Harvard Infantile Paralysis Fund should be sent to Kidder, Peabody & Co., 115 Devonshire Street.

NEW ENGLAND NOTES.

RHODE ISLAND.—John George O'Meara, M.D., who is a representative in the House of Representatives in Rhode Island, presented a resolution in that assembly recently, endorsing the daylight-saving movement. This resolution, which was discussed from a health and sociological plan by Dr. O'Meara, was passed both in the House and the Senate.

Plans for the enlarged work next summer of the Providence Floating Hospital are progressing rapidly. A campaign to raise the very necessary \$10,000 is on.

VERMONT.—The ninth annual report of the Brattleboro Mutual Aid Association is clearly indicative of the useful place which this public-spirited institution is filling in its community. As has previously been noted in this JOURNAL, the object for the organization of the Mutual Aid Association, as stated, is “to do what is possible to supply those needs in sickness that are not now properly covered by hospital service, by the visiting nurses, or by unorganized private nursing.” As an illustration of the manner in which the Association is fulfilling its purpose, it may be interesting to quote the report of the assistant superintendent, who has recently assumed charge of the work.

“My work during the year has been somewhat varied (assisting and helping wherever needed).

“In addition to doing the housekeeping, this work included assistance in supervising and teaching the attendants, and during the winter months it included helping the school nurse with her work; at one time I assisted in examining 176 children. As the West Brattleboro school was not included in her district then, I was

called out there quite often to look after children. At the time of the tonsillitis epidemic all the children's throats required examination, those with temperatures being sent home; also from time to time many children required visiting in their homes. Four talks were given to the mothers at Parent-Teacher Associations during the winter, there being meetings for the purpose in both districts. Ten social service cases were reported; where food and clothing were needed, these cases were referred for help to the town, or to the Associated Charities, and were visited and advised occasionally. I visited from time to time all the tubercular patients on our list, and investigated all cases reported. At Christmas there was visiting of needy families with children, and lists were sent to the committee on the municipal tree. While attending office every Friday afternoon, I had a class for the attendants. Previously they have been unable to attend class regularly, this being due very often to the distance of their cases, and also the inability to leave a patient during class hour. This year, however, we are sending those attendants unable to attend class a list of questions to be answered and returned during the week. During June and July all the homes where they had measles were visited, and instruction and advice were given to the mothers. I also visited the summer playgrounds and co-operated with Miss Clapp, the teacher, in looking after the children. All children who were sick or injured, also cases where there was sickness in the home, she reported to us; in that way we were able to reach many cases of which, otherwise, we would not have known. At one time a suspected case of infantile paralysis was reported; after investigation it was found that the child died of other causes. At another time eighteen cases of impetigo were reported, and fifty visits were made by our nurses before they were cleared up. During June and July I substituted for the district and maternity nurses while they were on their vacations, and in September I attended office while the secretary was on her vacation.

"The statistics for the past year show a most gratifying increase in most of our work. Of the 158 births recorded at the town clerk's office, 147, or 93%, had a graduate nurse present at the birth (which is many times the proportion found in other districts recently investigated in various parts of the country).

"The number of calls filled by our attendants has increased over last year, which confirms the fact that the doctors and families appreciate the nursing service supplied them.

"Owing to our good fortune in getting a Ford runabout, we have been able to visit many homes in outlying districts, for both prenatal and general care. We also have had the advantage of supervising and following up our attendants."

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.

BERKSHIRE DISTRICT MEDICAL SOCIETY.—Berkshire County is forming an evacuation Ambulance Corps with a full equipment. The originator and leader of the movement is Dr. Austin Fox Riggs of Stockbridge, who has as his chief assistants, Dr. John Blanchard Thomes, Dr. M. H. Walker, Dr. Thomas Littlewood, Dr. Harry Tate, all of Pittsfield. These are now enlisting and training a full quota.

Dr. I. S. F. Dodd of Pittsfield has received his commission as a captain in the Army Reserve Corps, and Dr. Frederick H. Howard of Williamstown has been appointed a lieutenant in the same corps.

Berkshire District held its annual meeting April 26, at which time Dr. F. B. Lund of Boston spoke on "Early Manifestations of Cancer." At the election of officers for the coming year, Dr. Ayres Philip Merrill was elected president; Dr. Vanderpoel Adriance of Williamstown, vice-president; Dr. O. L. Bartlett, secretary; and Dr. J. T. Howe, treasurer; Drs. Thomas Flournoy and M. H. Walker, committee of arrangements.

On April 24 the North Berkshire Medical Club held its regular meeting under the presidency of Dr. M. M. Brown, Dr. W. E. Preble of Boston gave a very interesting paper on "Mistakes in Diagnosis."

A. P. MERRILL,
District Correspondent.

NORFOLK DISTRICT MEDICAL SOCIETY.—The Norfolk District Society has recently sent the following circular letter to all regular physicians, resident in its territory, who are not members of the Society:

"You are a resident within the limits assigned to the Norfolk District of the Massachusetts Medical Society. We cordially ask you to consider the advantages of our fellowship. We wish to include in our membership all our reputable medical men, that we may stand as a united body for the best in all medical matters.

This last year we had most interesting meetings, with such topics, as, for example: Chronic Nephritis, by Dr. David L. Edsall; Cancer, cases and pictures shown by the staff of the Huntington Hospital; and a visit to the Infants' Hospital, with papers and cases shown by members of its staff.

We meet on the last Tuesday evening of each month from October to April, listen to papers and share in the discussion, and then have a social hour with refreshments. Our present membership is 560, and at our regular meetings, which are held at the Masonic Hall, 171 Warren Street, Roxbury, five minutes from the Dudley Street Transfer Station, usually have 125 members present.

Our annual meeting, held in May at a Boston Hotel, with a banquet followed by an entertainment supplied by our own Fellows, is a social event to which we all look forward, and is attended by 200 Fellows.

The examination for admission is now an oral examination only, by the Censors, whose next meeting is May 10, 1917, at the Masonic Hall, above noted.

As a member of our parent Massachusetts Medical Society you will receive the BOSTON MEDICAL AND SURGICAL JOURNAL, will share in the annual meetings held in June in Boston, and will have the protection of the Society by legal counsel in any malpractice suits brought against you.

If you would like to join us, telephone our secretary, Dr. Bradford Kent, Dorchester 15, and he will send you the necessary blank to fill out, and give you any other information you desire.

THOMAS F. GREENE,
President.

WORCESTER DISTRICT MEDICAL SOCIETY.—The regular weekly lecture of the Worcester Extension Course of the Harvard Graduate School of Medicine was by Prof. Walter B. Cannon at City Hospital, Worcester, on April 25, 1917. This was his second and concluding lecture on "Ductless Glands."

The attendance throughout the course has been large, and the members have expressed themselves enthusiastically in appreciation of the excellence of the instruction they have received.

Dr. Cannon's lectures terminate the course in Internal Medicine. Recognizing, however, that with the enactment into law of the amendment to the Workmen's Compensation Act, granting to the injured workman the right to select his own physician, a duty has fallen upon the rank and file of the medical profession to fit themselves to fulfil the economic and professional requirements of industrial accident work, the officers of the Extension Course have arranged with the Graduate School for two lectures on Industrial Surgery, by Dr. Frederic P. Cotton, of Boston, which will be open to the members of the former course without extra fee, and to other physicians by payment of a fee of two dollars. The first lecture was at Worcester City Hospital at 7.30 p.m., Wednesday, May 2.

E. L. HUNT,
Secretary.

Obituaries.

EPHRAIM CUTTER, M.D.

EPHRAIM CUTTER, M.D., a retired Fellow of the Massachusetts Medical Society, died at his home in West Falmouth, Massachusetts, April 25, 1917, at the age of 84. He was born at Woburn, September 1, 1832, the son of Dr. Benja-

min Cutter; was graduated from Yale College in the class of 1852, and from Harvard Medical School in 1856, receiving an M.D. also from the University of Pennsylvania in 1857, and an LL.D. from Iowa College in 1887. Dr. Cutter took the Boylston Prize in 1857 with an essay entitled, "Under What Circumstances do the Usual Signs Furnished by Auscultation and Percussion Prove Fallacious?" He published books on "Contributions to the Treatment of Versions and Flexions of the Unimpregnated Uterus," 1876; "Clinical Morphologies," 1888; "Food in Motherhood," 1890; also many contributions to medical periodical literature. He invented a eustachian catheter and a laryngoscope, and was one of the first to photograph the human larynx. One of his chief life interests was food, claiming that improper feeding was the cause of a large number of the ills of the human flesh. For many years he made his headquarters in New York City, although having a residence at West Falmouth. Dr. Cutter was twice married, his first wife, Rebecca Smith Sullivan, of Cambridge, dying in 1899; his second wife, Mrs. Anna L. Davidson, and two sons by the first wife, surviving him.

HERBERT B. MCINTOSH, M.D.

HERBERT MCINTOSH, M.D., a Fellow of the Massachusetts Medical Society, died at his home in Cambridge, April 24, 1917, aged 60 years. He was a former resident of Medway, where he once served as medical examiner for the seventh Norfolk District and as chairman of the school board. The son of George M. and Elizabeth Fretz McIntosh, he was born at Doylestown, Pennsylvania, January 20, 1857; was educated at Brown University, where he was graduated in 1885, and became an instructor at Worcester Academy, studying law at the same time. In 1888 he was admitted to the bar, and in 1896 he took the degree of M.D. from Bellevue Hospital Medical College; married Elizabeth E. Ellard in the same year, and settled in Medway in the practice of medicine. In recent years he had had an office in Boston, and had lived within the confines of Greater Boston, giving special attention to roentgenology and electrotherapeutics. His widow survives him.

Correspondence.

TOXIC JAUNDICE AMONG MUNITION WORKERS.

Boston, April 30, 1917.

Mr. Editor:—

The following is a copy of a letter which I have received from J. N. W. MacAlister, Secretary of the Royal Society of Medicine, London, and in view of the increasing importance of this subject, I ask that you give this the publicity of your columns that those interested in the subject may have an opportunity to send on their subscriptions.

F. D. Donoghue, Esq., M.D.,
Industrial Accident Board,
Boston, U. S. A.

Dear sir:—

On the suggestion of Dr. T. M. Legge, Medical Inspector of Factories for the Home Office, I write to inform you that we are about to publish a report of a discussion that has been held here on toxic jaundice among workers in T. N. T. factories. The discussion was opened by Dr. Legge and the following, among others, contributed:

Dr. T. M. Legge (H. M. Inspector of Factories), Lord Chetwynd, Capt. M. J. Stewart, R.A.M.C., Dr. Benjamin Moore, F.R.S., Dr. Spilsbury, Dr. H. M. Turnbull, Dr. I. Feldman, Surgeon-General H. D. Rolleston (Chairman), Dr. E. L. Collis, Major Morley Fletcher, R.A.M.C., Dr. O'Donovan (Med. Adviser, Ministry of Munitions), Fleet-Surgeon R. C. Munday, Dr. Castellain, Major P. S. O'Reilly, R.A.M.C., Dr. W. R. Smith (Beeston).

The discussion was held with the approval of the Ministry of Munitions, which sent its principal medical officers either to take part or to listen to it.

As editor of the "Proceedings," I can print only enough copies for our ordinary supplies and if, as Dr. Legge seems to think, there might be a demand among American factories for copies, I ought, if possible, to know at once, as after the one edition has been struck off it will not be possible to procure copies.

I may add that the Report is fully illustrated with colored and other illustrations of post-mortem specimens, etc.

Separate copies of the Report can be bought for five shillings, and for America (say) \$1.00. If ordering single copies, 10 cents should be added for postage; but parcels of a dozen or more would be sent carriage free.

Dr. Legge, who has advised me to write to you, suggests that if this letter is not addressed to the proper department to deal with the matter, perhaps you would be good enough to pass it on to the proper department.

Faithfully yours,

(Signed) J. N. W. MACALISTER,
Secretary.

Yours very truly,

FRANCIS D. DONOGHUE, M.D.

P. S. The present bibliography of Trinitrotoluene poisoning:

The Lancet, Dec. 1916.

"Precautionary Measures," Factory Department, Home Office, March, 1916.

"Rules for the use of Trinitrotoluene, made by the Minister of Munitions in pursuance of Regulation 35 A.A. of the Defence of the Realm," obtainable through T. Fisher Unwin, Ltd., London, W. C. 1917.

"The Prevention, Symptoms and Treatment of Tetral Dermatitis," by Enid Smith, M.B., B.S., London, April, 1916.

THERMOMETER DISINFECTION.

483 Beacon Street, Boston, April 16, 1917.

Mr. Editor:—

Your editorial, "Thermometer Disinfection," which appeared in the *JOURNAL* of April 12, 1917, has interested me very much. The subject, I feel, is of considerable importance, and I was glad to see an editorial discussion on this matter. The following simple device, I found to solve the problem of thermometer disinfection both in office and home calls.

The regular heavy "Board of Health" 5-inch test tube, when filled with alcohol and fitted with a tight

cork, makes an ideal thermometer-carrier. A small piece of absorbent cotton, placed at the bottom of the test tube as a padding, will prevent possibilities of breaking the thermometers. I keep two thermometers in the test tube of alcohol. By boring a small hole in the lower end of the cork, I am able to keep one of the thermometers inserted in the cork and thus suspended in the alcohol while the other is standing up loosely in the tube completely submerged in the alcohol. I always use the one inserted in the cork; this is in turn immediately replaced by the second one while the used one is put back into the tube completely submerged in the alcohol. In this way each thermometer is sure to receive an alcohol bath for from one to several hours before it is used again. I always like to wipe off the thermometer with a sterile sponge or gauze soaked in alcohol before and after using. More than one test tube can be fixed up in the same way and labelled 1, 2, 3, etc., for men with large practice, and used in rotation. Repeated cultures from such thermometers were found negative.

I believe this a very simple procedure to be adaptable to busy men in general practice and will do away with the more or less repugnant odor of formaldehyde as suggested by B. E. Hobsendorf, referred to in your editorial.

Respectfully yours,

LEON S. MEDALIA.

MEDICAL OFFICERS' RESERVE CORPS.

Mr. Editor:—

"Application blanks for Medical Officers' Reserve Corps and for other branches of the United States service were printed in the *Journal of the American Medical Association*, April 21, 1917.

"As it has been difficult to print and distribute from the War Department a supply of these blanks sufficient to cover every section of the country at short notice, the use of the form printed in the *Journal of the American Medical Association* will greatly facilitate progress in this connection. Your coöperation in bringing this matter to the attention of the physicians throughout your state will, therefore, be greatly appreciated."

The above paragraphs have been taken from a letter received from Dr. F. F. Simpson, Chief of Medical Section, Council of National Defense. This method has been chosen to bring it to the immediate attention of the medical profession of Massachusetts.

J. B. BLAKE, *Chairman*,

State Committee for Medical Preparedness.

REGISTRATION OF PHYSICIANS.

Worcester, Mass., May 3, 1917.

Mr. Editor:—

I hope that everyone will carefully read Dr. Bowers' lucid explanation of the new registration law, which appears in to-day's *JOURNAL*.

Legislators have written me, stating that so much abuse has been heaped upon them by physicians on account of this law that they felt disinclined ever to help the medical profession in any matter again.

Twenty-five cents and one short journey seems a small price to pay for the protection offered to legitimate practitioners by the re-registration item, and with the other provisions of the law there can certainly be no quarrel.

Very sincerely,

SAMUEL B. WOODWARD, M.D.

UNITED STATES CIVIL-SERVICE EXAMINATION.

ANATOMIST.

MAY 16, 1917.

The United States Civil Service Commission announces an open competitive examination for anatomist, for both men and women, on May 16, 1917. A vacancy in the Army Medical Museum, Office of the

Surgeon General, Washington, D.C., at \$1,600 a year, and future vacancies, requiring similar qualifications, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by re-statement, transfer or promotion.

As prerequisites for consideration for this position the appointee must have at least a collegiate degree, and have a thorough knowledge of the anatomy (and be experienced in the dissection) of disease-bearing mosquitoes of Southern United States, Panama, and the West Indies, and the Philippine Islands, and the relation of mosquitoes to the transmission of disease. A knowledge of pathology, bacteriology and pathologic histology is also required, and the appointee must be capable of making photomicrographs, must understand microscopes, and be able to prepare, card, and keep in order museum specimens.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must be examined in the State or Territory in which they reside and have been actually domiciled in such State or Territory for at least one year previous to the examination, and must have the county officer's certificate in the application form executed.

Applicants must submit to the examiner on the day of the examination, their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all citizens of the United States who meet the requirements.

Applicants should apply at once for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications should be properly executed, excluding the medical certificate, and filed with the Commission at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination as given at the head of this announcement should be stated in the application form.

SOCIETY NOTICES.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY.—The annual meeting of the Essex South District Medical Society will be held at the Relay House, Nahant, Wednesday, May 9, 1917, at 6.30 p.m. The meeting will be held jointly with the Lynn Medical Fraternity.

Dr. Robert B. Greenough and Lieut.-Col. W. P. Chamberlain, of the Army Medical Corps, will be the guests. Dr. Greenough will talk on the cancer problem, and Dr. Chamberlain will explain just what the Army service desires of the profession.

E. POIRIER, M.D., *President*.

H. P. BENNETT, M.D., *Secretary*.

Bristol South District Medical Society.—Annual meeting in Remington Hall, Fall River, on Thursday, May 10, at 3 p.m.

SPEAKERS

Dr. A. Worcester of Waltham: "District Societies."
Dr. C. L. Souder, of Boston: "The Cancer Outlook."
Dr. R. W. French of Fall River: "Three Hundred Gall Bladder Cases."

A. J. ABBE, M.D., *Secretary*.

HARVARD MEDICAL ALUMNI ASSOCIATION.—On Saturday, May 12, the triennial meeting and dinner of the Association will be held by order of the Council.

PROGRAM

Morning in the hospitals; luncheon at the Medical School, followed by inspection of the departments and demonstration and lecture; dinner in the evening at the Harvard Club. Speakers: Dr. Charles W. Elliot, Dr. W. S. Thayer, Dean Bradford, Dr. J. C. Warren; President F. C. Shattuck, toastmaster.

A complete program will be sent you early in May. Membership in the Association is not necessary but desirable. Save the date and come anyway.

A. B. EMMONS, 2d, M.D., *Secretary*.

Hampshire District Medical Society.—The annual meeting of the Hampshire District Medical Society will be held at Boyden's, Thursday, May 10, 1917, at 11.30 a.m. Presidential address by Dr. C. A. Byrne. Dinner at Boyden's, following the meeting. Censors' meeting at 2 p.m.

JOSEPH D. COLLINS, M.D., *Secretary*.

Worcester District Medical Society.—The annual meeting of the Society will be held Wednesday, May 9, 1917, at 6.00 p.m., at the State Mutual Restaurant, Worcester. The program is as follows:

1. Dinner.
2. Presentation of reports and election of officers for the ensuing year.
3. Annual oration by Dr. William L. Johnson of Uxbridge; subject "A Physician's Impressions of Florida."
4. Address by the President of the Massachusetts Medical Society, Dr. Samuel Bayard Woodward of Worcester.
5. "Good of the Society"—open discussion.

The censors meet for the examination of candidates for admission to Fellowship, Thursday, May 10, at 2 p.m., in the reference department of the Worcester Public Library. Candidates should bring their diplomas, unless their applications have already been filed with the Secretary and the diplomas verified by him.

The Worcester Chapter of the American Red Cross desires that all doctors holding Red Cross First Aid teachers' certificates register at the local headquarters that they may be assigned to classes. The Chairman of the First Aid Committee also desires volunteers for first aid teaching. This service receives moderate compensation.

ERNEST L. HUNT, M.D.,

Secretary for the Executive Committee.

MARRIAGES.

ISAAC P. FISKE, M.D., of North Coventry, Conn., was married on April 1st to Miss Annie Marie Schell of the same city.

CORNELIUS E. GEARY, M.D., of Fitchburg and Miss J. Louise Dyer, of Worcester, who is supervisor of district nursing in Fitchburg, were married on April 9, in Worcester.

APPOINTMENT.

Dr. FRANK T. LOUGEE has been appointed to the position of City Physician of Lynn, Mass., to fill the vacancy caused by the death of Dr. Joseph F. O'Shea. Dr. Lougee is a graduate of Harvard Medical School.

RECENT DEATHS.

HIRAM STERLING POMEROY, M.D., died at his home in Auburndale, April 20, 1917, of heart disease, at the age of 69. The son of Oren and Lucinda Pomeroy, he was born at Somers, Connecticut, January 22, 1848. He attended school at Monson, Mass., and entered Yale College with the class of 1872 but was forced to leave college before graduation because of illness. Going abroad, he received the degree of M.D. from the University of Leipzig in 1885, studying subsequently in Prague and returning to America in 1886. Then he settled in Boston to practise the rest of his life. He wrote a book on "The Ethics of Marriage" and a pamphlet entitled "Is Man Too Prolific?"

In 1891 Yale conferred her honorary degree of M.A. upon him. Dr. Pomeroy held membership in the Massachusetts Medical Society, Boston Medical Library, the University, Yale and Congregational clubs; he was a deacon of the Central Congregational Church in Boston and the Auburndale Congregational Church. He is survived by his widow, two sons and two daughters.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

May 17, 1917

ORIGINAL ARTICLES		BOOK REVIEW	
RECENT INVESTIGATIONS ON THE BACTERIOLOGY OF ACUTE POLIO-MYELITIS. <i>By Ludvig Heiktoen, Chicago.</i>	687	The Proceedings of the Charaka Club.	719
MOUTH INFECTIONS IN THEIR RELATION TO SYSTEMIC DISEASE. <i>By Paul A. Hudnott, M.D., Northampton, Mass.</i>	695	EDITORIALS	
THE INCIDENCE OF INTESTINAL ADHESIONS AS A FACTOR IN CHRONIC INTESTINAL STASIS IN THE EPILEPTICS. <i>By H. Caro, M.D., Palmer, Mass.</i>	697	RATIONAL ECONOMY OF DIET.	711
RESPIRATORY SUCTION AN AID IN SURGICAL SHOCK. <i>By W. T. Porter, M.D., Boston.</i>	699	PHYSIQUE AND THE MILITARY AGE.	712
MEDICAL PROGRESS		HARVARD BASE HOSPITAL UNIT.	712
PROGRESS IN GYNECOLOGY. <i>By Stephen Rushmore, M.D., Boston.</i>	709	POSTPONEMENT OF INDUSTRIAL HEALTH INSURANCE.	713
REPORTS OF SOCIETIES		MEDICAL NOTES.	714
NEW ENGLAND PEDIATRIC SOCIETY, MEETING OF DEC. 29, 1916.	707	MASSACHUSETTS MEDICAL SOCIETY	
		NOTES FROM THE DISTRICT MEDICAL SOCIETIES.	719
		MISCELLANY	
		NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.	729

Original Articles.

RECENT INVESTIGATIONS ON THE BACTERIOLOGY OF ACUTE POLIO-MYELITIS.*

BY LUDVIG HEIKTOEN, CHICAGO.

My purpose is to bring before you the results of certain recent investigations into the bacteriology of acute epidemic poliomyelitis. The early bacteriological examinations in poliomyelitis yielded inconstant and inconsistent results that need not be reviewed in detail, but it is not unlikely that Geirsvold, for instance, as well as others, had in hand the organisms now to be considered. Since the discovery that poliomyelitis is transmissible to monkeys and that the causative agent passes through certain filters, the investigations into the etiology and transmission of the disease have been conducted practically exclusively from the viewpoint that the cause is a filterable, ultramicroscopic or nearly ultramicroscopic agent, and owing very largely to the comprehensive work of Flexner and his associates this view as to the cause of poliomyelitis is now accepted generally. In the meantime bacteriological examination by the usual and ordinary methods of the nervous system and other tissues of poliomyelitis patients apparently was suspended, presumptively because such methods no longer were believed capable of yielding results of any real value. Accordingly, the announcements last fall from

several sources that certain coccal bacteria with interesting properties had been obtained from the brain and cord of a not inconsiderable number of cases of acute poliomyelitis by direct cultural methods, were rather unexpected. I believe that no matter what the final conclusion as to the significance of these observations may be, they are of such nature as to call for careful consideration.

THE METHODS OF ISOLATION.

In the closer consideration of the newly studied organism from cases of poliomyelitis I shall follow the results reported by Dr. George Mathers¹ of the Memorial Institute for Infectious Diseases, with whose work I am directly familiar, being careful, however, to note important deviations and additions in the reports of others.

Mathers made his primary cultures from the brain and spinal cord and other materials from typical cases of acute poliomyelitis, obtained as soon after death and by as sterile methods as possible. Small pieces of nervous tissue were washed in sterile salt solution, and after being thoroughly crushed with sterile forceps, held within the culture tubes, dropped into the medium. In this way inoculations were made in ascites fluid media containing pieces of fresh sterile rabbit kidney, and ascites dextrose broth. The tubes were incubated under aerobic and anaerobic conditions, the latter being obtained by means of a layer of paraffin oil on top of the medium. It is perhaps well to state that special, even elaborate, control tests have been made in each case to determine that the media

* This paper is the substance of a Cutter lecture, Harvard Medical School, April 3, 1917.

and the rabbit tissue used were sterile to begin with. Usually growth would appear in some of the tubes in 1-5 days; in a series of 10 consecutive cases, cultures of the coccus in question were secured from the nervous system in 9, 7 times in pure form, twice with staphylococci, once with *B. subtilis* also; it was grown from the mesenteric lymph nodes and the kidneys in one of two cases in which those structures were examined.

Rosenow and his co-workers² state that by emulsifying in a sterile air chamber a rather large amount of brain and cord obtained under sterile precautions, and inoculating ascites-dextrose agar and ascites fluid containing sterile tissue with varying amounts of the emulsion, they succeeded in isolating a peculiar coccus from the brain and cord in each of 12 cases of poliomyelitis in New York City which came to necropsy, and also from the intervertebral ganglia and lymph nodes in some of the cases. And Nuzum and Herzog³ in Chicago, using in part the same materials as Mathers, and similar methods, obtained pure cultures of what, from their description, may be the same coccus from the brain and cord of 9 cases, once with *B. subtilis* also.

We see, then, that in something like 20 or more fatal instances of poliomyelitis, about equally divided between Chicago and New York, studied at the same time, namely, in August and September, 1916, pure cultures of apparently the same organisms were obtained in very nearly 100%. It should be said that smears and sections of brains and cords from which cultures were obtained have been found to contain coccal forms quite like forms seen in the cultures; this is true of every case in Mathers' series. As shown in Fig. 1, similar bodies are demonstrable in older poliomyelitic material also.

Mention should be made of the results of cultures of materials from the throat and of cerebrospinal fluid in poliomyelitis. From the throat, the tonsils, and tonsillar abscesses of poliomyelitis patients, Rosenow, Towne and Wheeler isolated cocci with the same characteristics as those they obtained from the brain and cord. In their hands the cerebrospinal fluid drawn during life proved sterile, and this was Mathers' experience also, but in five cases examined after death he got pure culture in each case. Nuzum and Herzog, who report the isolation of the organisms from tonsils and mesenteric lymph nodes, as well as from the nervous system, obtained it too from the cerebrospinal fluid during life.

CULTURAL PECULIARITIES.

The different strains of micrococci obtained by Mathers in cultures of the brain and cord of 9 cases of poliomyelitis grow in the same way in various ascites fluid media and on blood agar. In ascites dextrose broth there develops, after

18 hours or longer, a diffuse turbidity, which becomes more or less granular, while a whitish sediment collects at the side and bottom of the tube; in the anaerobic tissue media the part around the tissue becomes opalescent in 24-48 hours or so, a fine sediment collects about the tissue, gradually a fine haze extends upward, and eventually the whole column becomes turbid, from 3-7 days being required for a good growth to develop.

Of these strains, all fermented dextrose, maltose, lactose; the majority mannite, raffinose and salicin; and one-half inulin. Two strains liquefied gelatin and decolorized litmus milk.

On blood agar (1 part of human blood to 9 parts of plain agar) the organism grows slowly, especially early after isolation. Initial cultures have not been obtained on this medium. The colonies are usually somewhat dry, small, and surrounded by faint halos of greenish discoloration. After two or three days the halo becomes a hazy ring of hemolysis.

As to the strains isolated by others, we as yet have brief preliminary statements only, which in some respects are contradictory, especially as to the fermentation, but correspond closely with respect to the manner of growth in ascites media and on blood agar.

MORPHOLOGIC CHARACTERISTICS.

In ascites dextrose broth the forms vary from large round or oval cocci and diplococci to minute barely visible forms. Chains occur with both large and small elements. In cultures a week or two old may be peculiar, irregularly-staining bodies. On blood agar we have a medium-sized coccus, slightly oblong, non-capsulated, arranged in pairs and short chains.

In the anaerobic media minute forms appear to predominate in pairs, chains, and groups, intermingled with large cocci, and in older cultures with peculiar bodies. Rosenow, Towne and Wheeler state that in a very few instances the early smears (from ascites fluid containing sterile tissue) showed the tiny globoid bodies described by Flexner and Noguchi in apparently pure culture, but usually there was also a certain number of medium-sized diplococci in short chains, which, so they say, Flexner and Noguchi and others considered as contaminations. The larger forms tend to grow smaller, so that frequently at the end of 12 or 14 days nothing but the tiny globoid bodies, single, in pairs, chains and clumps, could be found in the same tubes. After about three weeks the organisms became both larger and smaller; the small forms passed beyond the limit of visibility, and nothing but rather large oval cocci, staining a pinkish tint with the Giemsa stain, could be seen. They emphasize also a marked tendency of the micro-organism to change to the form characteristic of the medium in which it is planted. Thus, an apparently pure culture of the very small globoid bodies in ascites tissue fluid when trans-

ferred to ascites-dextrose tissue broth would grow out rapidly, often in 24 hours, into the characteristic polymorphous coccus. Conversely, a transplant from broth to ascites fluid would grow slowly smaller.

With the possible exception of very minute forms, the organism is stained by Gram's method.

The tendency of the poliomyelitis coccus to vary in size and form is of much interest, but it should be remembered that cultures of staphylococci and streptococci also may assume large and small forms. When these bacteria are grown anaerobically in ascites media they may develop forms that closely resemble the bodies in Flexner and Noguchi's cultures of the minute organism from poliomyelitis; at the same time the tendency of the poliomyelitis coccus to assume small and peculiar forms is probably more marked than in the case of ordinary staphylococci and streptococci (Mathers).

FILTERABILITY.

Naturally the question arose whether the pleomorphic coccus from poliomyelitis would pass through filters commonly regarded as bacteria-tight. All the reports at hand state that in cultures the organism is filterable, the filters used being the Berkefeld N (in one case Berkefeld V). Rosenow, Towne and Wheeler state that "cultures showing the small forms have been filtered, and cultures of the filtrate have grown, but no growth has been obtained from filtrates of the same strains showing only large forms." Mathers finds that cultures pass Berkefeld N filters, especially ascites fluid tissue cultures, but not the Maassen (porcelain) filters. He also obtained typical, pure growths of the organism in cultures of Berkefeld N filtrates of suspensions of brain tissue in sterile salt solution in 3 cases; in 4 others the cultures were sterile. Rosenow and his associates found cultures of Berkefeld N filtrates of the brain and cord of rabbits dead with paralysis after intravenous injections of the large form of the organism to grow as very small bodies in ascites fluid, with or without sterile tissue, and as a polymorphous coccus in ascites dextrose broth.

Experiments with porcelain filters of the Chamberland type, through which the active agent of poliomyelitis is said to pass with little difficulty, do not seem to have been made.

THE EFFECTS IN ANIMALS.

At the present time the effects of the newly-discovered organism in poliomyelitis on animals may be discussed with profit as studied in the rabbit and monkey only. Rosenow, Towne and Wheeler report that injections of the organism in mixed and pure form cause paralysis with lesions of the nervous system in guinea-pigs, dogs and cats also, and Nuzum and Herzog claim that lambs are similarly affected—all animals heretofore regarded as insusceptible—but as yet

no detailed description of the symptoms and lesions has been published. As regards the rabbit, all the observers appear to have obtained practically the same results: In young animals intravenous, intraperitoneal or intracerebral injection of pure cultures of the organism, after an incubation period, usually of 3-7 days, but occasionally longer, frequently cause a flaccid paralysis of one or more legs, as a rule followed by death 2 or 3 days later, sometimes in convulsions and sometimes with rapid respiratory embarrassment. Of 109 rabbits, 6 to 12 weeks old, injected intravenously or intracerebrally by Dr. Mathers with cultures, brain emulsion or filtrate of brain emulsion, 58 developed paralysis, the proportion being about the same in the various groups according as the mode of injection and substance injected; 15 died in convulsions or after the development of marked weakness, but without any indication of paralysis; the rest died very soon after the injection or remained entirely well. Arthritis developed in 2, iritis in 1, and endocarditis in 1. The organism was recovered in pure form, except for an occasional contamination, from the brain in 77 instances, the cord in 69, the cerebrospinal fluid in 53, from brain, cord or cerebrospinal fluid in 87, from the heart blood in 23, and from joints in 3, cultures from the materials indicated being made with equal care in every instance.

The organism appears then to settle chiefly in the nervous tissues where definite lesions are produced, in which it is demonstrable microscopically and from which it is recovered easily in pure form. The principal changes are hyperemia, edema and minute hemorrhages, especially in the gray matter, which in the spinal cord may stand out as a pink cross; the cerebrospinal fluid may be turbid and under pressure, the brain and cord soft and swollen; the microscopic changes are given as congestion and minute hemorrhages and more or less round cell infiltration in the gray matter, degeneration of the motor ganglion cells with satellitosis and neurophagocytosis. Nuzum and Herzog state that the changes in inoculated rabbits differ from those of poliomyelitis in man in that no perivascular infiltration is present and that the infiltrating cells are probably not lymphocytes. To these and other questions concerning the lesions in rabbits we shall return shortly. I would say here that these effects in rabbits have been obtained with cultures that have passed through 14 culture generations on blood agar.

Only few experiments have been made on monkeys. Mathers injected two rhesus monkeys, one intraperitoneally and one intravenously with the bacteria in 15 c. c. of a 24 hour ascites-dextrose-broth culture made directly from the brain of a poliomyelitis patient, but paralysis did not develop. He also injected 2 monkeys intracerebrally, one with the bacteria in 0.5 c. c. and the other with those in 1 c. c. of the same culture; the latter animal developed a flaccid

paralysis of the left arm in 4 days and was allowed to live, regaining partial use of the arm. Rosenow, Towne and Wheeler produced "characteristic paralysis and lesions in monkeys" by injections of a strain which, after isolation from a poliomyelitis brain, had passed through a series of three rabbits. And Nuzum and Herzog successfully inoculated a monkey with a mixture of five strains, but they do not state how long these strains had been cultivated. Obviously the possibility that the material injected in

in rabbits: smears of the brain tissue at the last examinations (March 12, 1917) rather indicated an increase in the number of cocci (Fig. 2).

REACTIONS OF IMMUNITY.

As yet we have learned but little concerning the immunity reactions of the organism we are

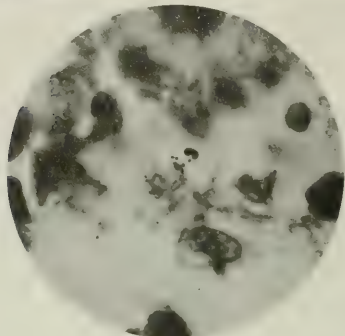


FIG. 1.

these experiments may have contained a distinct poliomyelitis agent in addition to the bacteria cannot be excluded; in the experiment of Rosenow, Towne and Wheeler, such agent may have been carried along through the series of rabbits, as there appears to be little question that the agent of poliomyelitis may survive in rabbits.

RESISTANCE TO GLYCEROL.

All observers state that the organism survives in poliomyelitis nervous tissue preserved in ster-

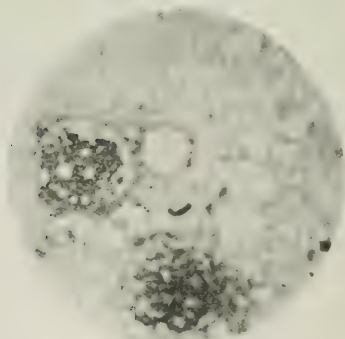


FIG. 2.

ile 50% glycerol. From brain tissue treated in this way Mathers has obtained pure cultures at each of five successive monthly examinations, the organism retaining its power to cause paralysis

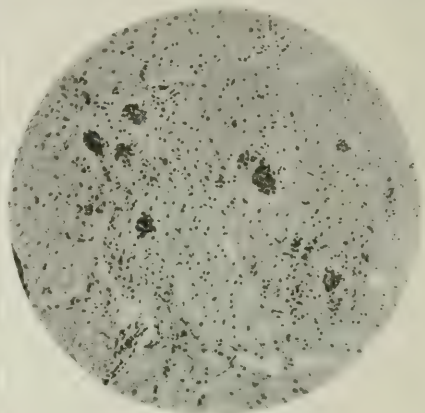


FIG. 3.

discussing. It is not agglutinated by antiserum for groups 1 and 2 of the pneumococcus (Mathers). In the serum of 7 patients, studied between the 6th and the 21st day of the attack of acute poliomyelitis, Mathers and Tunnicliff⁴ found a definite increase in opsonin for the organism, lasting for 1 to 10 days. As no change was observed in the opsonin for ordinary streptococci

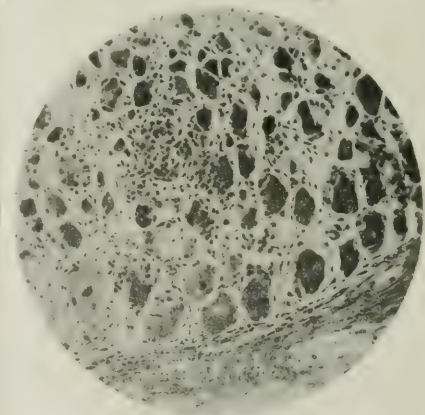


FIG. 4.

in the serum of these patients, the thought arises that the opsonic reaction may be of differential value. The serum of rabbits injected with poliomyelitis cocci by Dr.

Katharine Howell (unpublished observations) has been found to contain much specific opsonin, acting on these cocci in a dilution of 1-7500, but having no stronger effect than normal serum on common streptococci and pneumococci. In such immune serum there is definite increase in the power to fix complement also, but whether of the strength and nature required for a test of differential significance we have yet to learn.

The protective and other effects of injections of the coccus have not received much attention as yet. Rosenow, Towne and Wheeler² record an experiment, the results of which they believe indicate that injections in the monkey of the coccus or of materials from animals injected therewith, all under conditions which would seem to exclude the anaerobic organism described by Flexner and Noguchi, may protect against poliomyelitic monkey virus (virulent emulsion of spinal cord or brain of monkey infected with poliomyelitis). New experiments with amplifications are needed to throw light on the relationships suggested by this result.

EXPERIMENTS WITH MONKEY PASSAGE-VIRUS.

Organisms, quite like those isolated from the brain and cord in human poliomyelitis have been obtained from glycerolated monkey virus. Rosenow and his co-workers state that they isolated such organisms from "brain and cord of paralyzed monkeys injected intracerebrally with fresh emulsions of brain and cord from human poliomyelitis (fresh human virus), with glycerolated human virus and monkey virus." While it is possible that the organism in these cases may have entered the brain and cord of the monkeys as secondary invaders during the course of the induced poliomyelitis, they very well may have been introduced with the virus because they have been found to occur in the brain and cord in the human disease, the primary source of all virus, and because they resist glycerol, and readily pass filters used to remove extraneous organisms from virus suspensions. Hence it does not seem strange that Mathers without any special difficulty isolated similar organisms from 4 of 7 samples of glycerolated monkey virus obtained elsewhere, 3 times in pure culture and once mixed with a staphylococcus, organisms which culturally, morphologically, and in their effects on rabbits, and in respect to filterability, in no way differ from those obtained from human poliomyelitis. The details are to be published by Dr. Mathers.

From the primary cultures in ascites dextrose broth inoculation of blood agar was made, and in the fourth generation on this medium, the transfer in each instance being made from a single colony, one of these strains caused a typical poliomyelitis in a young rhesus. The growth of 2 slants 24 hours after inoculation, was washed off in 1 c. c. of salt solution and injected intracerebrally; on the fifth day the monkey was

weak, irritable and trembling; on the next day it had a flaccid paralysis of both lower extremities and of the right arm; it died with the typical gross and microscopic lesions of acute poliomyelitis. Inoculations with heart blood and joint fluid remained sterile, while the spinal fluid, the brain and cord gave pure growths of a coccus just like the one injected; cocci were found also in sections of the cord.

I would place special emphasis on the fact that in this experiment typical poliomyelitis was produced in a monkey by the injection of cocci obtained in ascites dextrose broth in pure culture from a glycerolated monkey virus, transferred to blood agar, and then retransferred 4 times from single colonies on this medium under aerobic conditions. The interpretations that suggest themselves to me of this interesting result are that the true cause of poliomyelitis was carried along in the cultures on blood agar or that the coccus caused the disease in the monkey, this disease being or not being true poliomyelitis. Further experiments are necessary, but that the disease in the monkey must be regarded as truly poliomyelitic is indicated by the result of the following experiment:

With the brain tissue of this monkey there was prepared with special care a Berkefeld filtrate, which seemed to be free from bacteria in the usual sense and which was injected into the brain of a young monkey (Monkey 2). On the 5th day there developed, after the usual premonitory symptoms, a limp paralysis of both arms and the left leg, followed by death. The lesions were typical of acute poliomyelitis (Fig. 3 and 4), cocci were present and cultures gave the same results as in the monkey which yielded the filtrate injected. As stated, at the time of injection this filtrate appeared to be bacteria-free, and all the aerobic cultures did remain sterile, but on the 11th day after they were made the anaerobic cultures began to show a faint growth around the tissue, consisting of very small gram-staining cocci in groups, pairs and chains with occasional large forms. Transferred to blood agar this coccal growth after 48 hours formed small, dry, green colonies and proved to be identical with the growth from the original brain tissue. We have here a good example of how difficult it may be to secure strictly bacteria-free filtrates of poliomyelitis tissue by means of the filters (Berkefeld) ordinarily used for that purpose. It would seem from this result that the freedom of Berkefeld filtrates from bacteria cannot be determined as readily as we are accustomed to believe.

POLIOMYELITIS IN THE RABBIT, WITH SPECIAL REFERENCE TO THE CHANGES CAUSED IN THE NERVOUS SYSTEM OF THIS ANIMAL BY THE COCCUS UNDER CONSIDERATION.

In view of the effects injections of the coccus from poliomyelitis produce in rabbits it becomes necessary to sketch rapidly the present state of

the question of experimental poliomyelitis in this animal. The situation prior to the recent work by Rosenau and Havens⁶ is well defined in the following statement by Flexner⁷: "At first it was strenuously denied that rabbits could be infected at all with the virus of poliomyelitis, and the examples of supposed successful inoculation reported were entirely disbelieved; but—and here he evidently refers to the work published by Marks⁸—it must now be accepted that young rabbits occasionally, but by no means generally, are subject to inoculation with the virus of poliomyelitis, at least after it has passed through a long series of monkeys. Apparently a small percentage only of the inoculated rabbits develop any obvious symptoms, and these die, as a rule, during convulsive seizures which come on suddenly. A given virus has up to the present been sent through a series of six rabbits, after which it has failed to be further propagated. From the sixth series it has been reimplanted on the monkey, in which animal typical paralysis has been produced. It remains to add that the rabbits which succumb to the inoculation do not show any characteristic alterations of the central nervous system or other organs, as far as has been determined. The monkey, on the other hand, invariably shows the typical lesion of the central nervous system."

We come now to the interesting work of Rosenau and Havens who carried a monkey virus progressively through 8 series of young rabbits. Apparently rabbits older than 6-8 weeks were insusceptible; success followed less than one-half the inoculations (intra-cranial, intravenous, into sheath of sciatic nerve, intranasal insufflation). Two chief groups of symptoms are described, developing usually after an incubation of 7-11 days; in the one, paralysis of one or more legs, with death, is the outstanding feature, and in the other a rather sudden weakness with extreme dyspnea, soon ending in death. Sometimes the two were combined. The gross lesions were injection of the pial vessels, hyperemia of the gray matter and more or less edema. Microscopically are described "capillary congestion, focal hemorrhages into the gray matter, degeneration of the large motor horn cells, and infiltration with cells of uncertain origin. These cells for the most part seem to be proliferated glia cells and therefore appear to be different from the infiltrating lymphocytes of the lesions of poliomyelitis in man. They are scattered throughout the grey matter, and are also grouped in satellite arrangement around the nerve cells, but the perivascular infiltration, so typical of the lesions of poliomyelitis in man and the monkey, is absent in the rabbit. A moderate degree of round-cell infiltration is occasionally seen in the meninges." Rosenau and Havens point out that while the lesions are not as distinctive as in man and monkey because perivascular infiltration is absent and the infiltrating cells possibly are not lymphocytes, it is more reasonable to believe

that they are dealing with a virus which perhaps has undergone modifications of some kind than to assume that the disease induced in the rabbit is distinct from poliomyelitis. It seems to me that both the symptoms and the lesions noted in these experiments directly strengthen Flexner's conclusion that young rabbits occasionally are subject to inoculations with the virus of poliomyelitis.

The question that now presents itself is how do the lesions in the nervous system of rabbits injected with the coccus from poliomyelitis and from glycerolated monkey virus, compare with the lesions of the natural disease and of the induced form in monkey and rabbit? On account of the stress placed on the anatomical picture as a means of verification of the successful transmission of poliomyelitis to these animals, this question assumes a special interest. From my own study of materials at hand from rabbits inoculated by Dr. Mathers in various ways in the course of experiments with the coccus from poliomyelitis, I am impressed with the apparent variation in intensity and nature of the lesions not only in different animals treated in approximately the same way but in different parts of the nervous system of individual animals. The impression may be the result of the necessary limitation of our examination of single animals so far to relatively very small parts of the nervous system; and I think more extended examinations are needed for an adequate picture of the extent and nature of the lesions. At first glance congestion, edema, minute hemorrhages, and a moderate diffuse increase in the number of



FIG. 5.

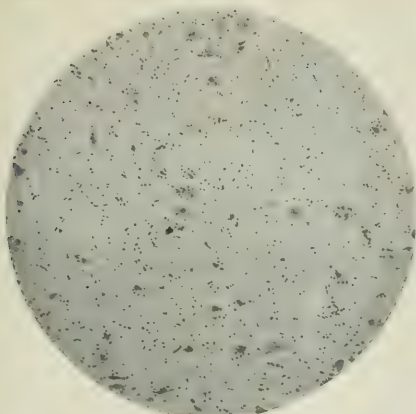


FIG. 6.

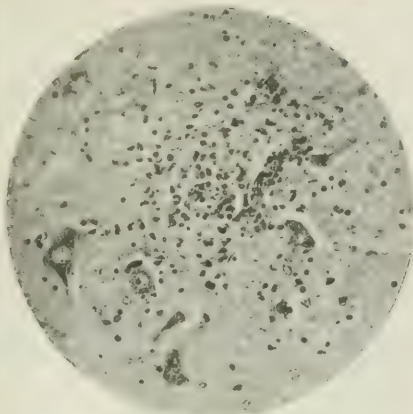


FIG. 8.

round cells in the gray matter, especially of the cord, with evident degeneration of motor cells and the gathering of at the most a few small cells at their margins, appear to be the prevailing features of the lesion. But focal accumulations of cells in the anterior horns and in the gray matter of the brain stem, usually about some small artery; infiltration, essentially lymphocytic, of the leptomeninx (Fig. 5), and of the choroid plexus (Fig. 7), and perivascular cellular accumulations (Fig. 9) quite as typical as those in human and monkey poliomyelitis, all occur and probably to a greater extent than so far observed. I have seen polynuclear infiltration of the pia with fibrinous exudation, but such changes seem quite exceptional. Neurophagocytosis, that is the invasion of the interior of ganglion cells by small cells that act as phagocytes, and which is so characteristic a feature in the passage-virus po-

liomyelitis of the monkey described by Flexner and others, has not been seen save in isolated instances in our rabbit material. Only very rarely are cells seen inside the neurocytes. The accumulation of 2-3 or more small cells at the margin of more or less altered ganglion cells, often lying in depressions on the surface, is however, common (Fig. 6). This is the so-called satellitosis; no doubt it frequently is called neurophagocytosis also. It may be noted here that Kling, Petterson and Wernstedt⁹ describe a somewhat similar condition, which they call glia-cell-neuronophagia, in monkeys injected with filtered washings of the nose, throat, etc., of poliomyelitis patients, changes which they regard as degenerative rather than infiltrative owing, they believe, to a relative weakness of the virus.

I cannot go further into these matters now. I would emphasize, however, that the changes

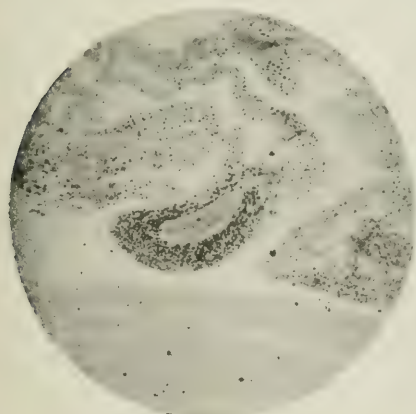


FIG. 7.

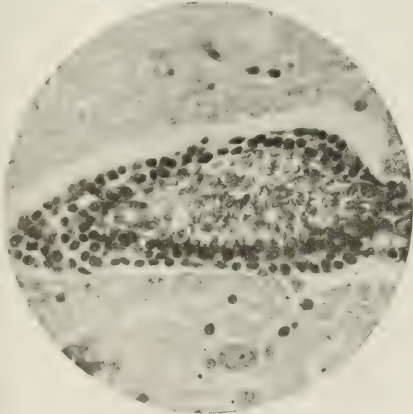


FIG. 9.

in the nervous system in rabbits inoculated with the coccus from poliomyelitis approach the changes of human and monkey poliomyelitis just as closely as those described by Rosenau and Havens in rabbits injected with passage-virus, and even closer because they reveal perivascular infiltration, a feature in the nervous lesion of poliomyelitis on which much stress is placed. It should be stated too that in our rabbits we have found local necrotic lesions in the liver and changes in lymph nodes similar to those described by some in poliomyelitis. However, in the absence of the crucial confirmation test of the production of typical poliomyelitis in monkeys with more refined materials than used so far from rabbits in which these lesions have been produced by injection of the coccus, we probably better not conclude now that the lesions described are pathognostic of poliomyelitis in the rabbit.

SIGNIFICANCE OF MICROCOCCUS—RECAPITULATION.

Heretofore the bacteria obtained from poliomyelitis have been regarded as contaminations of cultures or as secondary invaders. In the present case it seems to me that the first possibility may be dismissed from consideration without further notice as the circumstances surrounding the isolation of the coccus in hand are of such nature that it never can be read out of court as a contamination. As to the alternative possibility indicated it is safe to say that were it not for the remarkable effects of the coccus on the nervous system of monkeys and rabbits, its filterability, and its resistance to glycerol, it promptly would have been classed as a typical secondary invader and probably given only scant further notice. But by reason of these noteworthy properties this coccus demands a more considerate treatment. We might assume that the coccus is a secondary invader which may carry the actual cause of poliomyelitis with it from culture to culture or from culture to animal and back; or we might make so bold as to assume that the coccus is itself the cause of poliomyelitis. In either case we quickly encounter difficulties to be pointed out that we at present are unable to meet satisfactorily. Further and crucial experiments are necessary.

The question arises, why has not this coccus been seen and found before? One would think that a coccus as readily demonstrable as this would have been encountered, if present, in the extremely thorough and competent search in recent years of what seems highly favorable material from spontaneous as well as experimental poliomyelitis. Are there perhaps different diseases included under the name of epidemic poliomyelitis? As there is ground for question as to the constancy of this coccus in poliomyelitis we need a larger body of new observations on that point. Observation and experiment, not argument, will solve the problems raised.

I hope the account of the facts I have tried to give is sufficient to justify the recapitulation I now shall present.

The micrococcus recently found in poliomyelitis and in poliomyelitis monkey virus appears to have many properties in common with the virus of the disease and with the minute organism described by Flexner and Noguchi: Under the conditions in which this minute organism was grown, the coccus appears to grow much in the same way and to assume very minute forms; the coccus readily passes the filters commonly used in the study of poliomyelitis virus, but the very important question, whether it will pass the finest filters that are said to let the active agent in the virus go through, has not been determined; like the virus the coccus under certain conditions is strongly resistant to the prolonged action of glycerol; in monkeys injections of the coccus 3 to 4 culture generations removed from the primary culture have produced conditions absolutely indistinguishable, clinically and anatomically, from the classical induced poliomyelitis in this animal, but the possibility that what may prove to be the true agent of poliomyelitis may be carried along with the coccus under such conditions must be considered; in young rabbits the coccus causes a flaccid paralysis and also other nervous symptoms as well as lesions that correspond almost completely to lesions regarded as distinctive of poliomyelitis, but the crucial confirmation test of production of poliomyelitis in monkeys by inoculation of cultures or other materials, from such rabbits is still largely lacking; like the active agent in poliomyelitis virus the coccus too is strongly neurotrophic, and in the human disease as well as in the inoculated rabbit and monkey it locates with what seems a special preference in the central nervous tissues, in microscopic preparations of which it is demonstrable without great difficulty and from which it can be obtained in culture.

In various aerobic cultures, *e. g.*, blood agar, the coccus grows more or less like a streptococcus of the viridans type, and herein it differs from the minute organism of Flexner and Noguchi, which is not known to grow under aerobic conditions at all. I mention again that in inoculated rabbits the coccus in what seems now to be rare instances is associated with arthritis, iritis, and endocarditis, conditions heretofore not mentioned in reports on rabbits inoculated with poliomyelitis virus. Finally, the coccus is said to have caused paralysis and nervous lesions in several species which the earlier work indicated are not susceptible to the virus of poliomyelitis, but it must be borne in mind that experiments with the coccus have not proceeded far enough to make such statements in any sense final.

The study by immunologic methods, of the relationship of the coccus to the active agent in poliomyelitis virus, has not proceeded far

enough to yield any definite results. That the coccus may take part in the reactions of the body during the acute stages of poliomyelitis is indicated by the increase in specific opsonin to which I have referred. I think it is of much interest that the coccus appears to be specific in its immunity reactions. Perhaps it may prove possible by such reactions, in conjunction with certain further tests, to learn to separate it easily from the other cocci with similar morphologic and cultural characteristics—in other words to work out a diagnostic method of practical value to the physician as well as the epidemiologist, in case future investigations shall show that the coccus is associated closely with poliomyelitis.

To conclude—the exact significance of this coccus in epidemic poliomyelitis cannot be determined now. The number of cases studied for its presence is too small to permit the conclusion that it occurs constantly in the disease or any form of the disease; in the few instances in which injections of cultures have resulted in a condition indistinguishable from what is accepted as poliomyelitis in the monkey, the possibility that another and more important microbe may have been present cannot be excluded; the true poliomyelitic nature of the very interesting lesion caused by the coccus in rabbits has not been confirmed by proper tests on monkeys; and we lack also the results of extended immunization experiments. In any event a most interesting coccus has been found that merits study for its own sake as well as on account of the close relation its brief history bears to poliomyelitis.

NOTE.—The recent articles by Flexner, Amoss, Bull (*Jour. Exp. Med.*, 1917, Vol. xxx, p. 499 *et seq.*), Rosenow and Towne (*Jour. Med. Research*, 1917, Vol. xxxvi, p. 175), and by Blandon (*Ibid.*, p. 1) appeared too late to be considered at this time. They do not appear to me, however, to necessitate any material revisions in my presentation.

REFERENCES.

- ¹ Mathers: *Jour. A. M. A.*, 1916, 67, p. 1019; *Jour. Infect. Dis.*, 1917, 20, p. 113.
- ² Rosenow, Towne and Wheeler: *Jour. A. M. A.*, 1916, 67, p. 1292.
- ³ Nuzum and Herzog: *Jour. A. M. A.*, 1916, 67, p. 1265; *Nuzum, Ibid.*, p. 1437.
- ⁴ Mathers and Funnell: *Jour. A. M. A.*, 1916, 67, p. 1935.
- ⁵ Rosenow, Towne and Wheeler: *Jour. A. M. A.*, 1917, 68, p. 280.
- ⁶ Rosenow and Havers: *Jour. Exp. Med.*, 1916, 23, p. 461.
- ⁷ Flexner: *The Lancet*, 1912, Nov. 9.
- ⁸ Marks: *Jour. Exp. Med.*, 1911, 1, p. 116.
- ⁹ Kling, Wernstedt and Pettersson: *Investigations on Epidemic Infantile Paralysis*, The State Medical Institute, Stockholm, 1912, p. 211.

MOUTH INFECTIONS IN THEIR RELATION TO SYSTEMIC DISEASE.*

By PAUL A. HUDNUT, M.D., NORTHAMPTON, MASS.

DR. WOODS HUTCHINSON has very aptly said: "A man is known by the teeth he keeps." This little aphorism, so true from every standpoint, I intend to make the keynote of my remarks. There is no doubt that affections of the teeth

and gums have recently come into great prominence, from the standpoint of etiology, and the practice of dentistry is beginning to take its proper place beside the other specialties. And certainly, viewed as to their bearing upon the general health, the teeth are quite as important as, for example, the tonsils. At any rate we know that large sums of money are now being spent in order to elevate the standard of dental practice. For example, the College of Physicians and Surgeons of New York has this year included in its regular medical curriculum a complete course in dental pathology. I understand, moreover, that the Rockefeller Foundation is endowing a dental hospital in connection with Columbia University, where it is the intention to educate what we may call super dentists; such men as are now found only in the larger cities: men who use an x-ray outfit in their offices as a matter of daily routine and with whom the physician is glad to consult. Also within the year, the Extension Teaching Department of the Rockefeller Foundation has helped to establish, in connection with Columbia University, a School for Dental Nurses, whose work will take them into the public schools, dental offices and the homes of patients, in "follow-up" visits.

In this connection it is of interest to hear that Columbia and Cornell have combined with the Roosevelt, Presbyterian and St. Luke's hospitals to found, in New York City, a twenty-million-dollar medical center, to be one of the largest and most complete in the world. Philadelphia promises to equal, if not surpass New York in a similar project. In the out-patient departments of city hospitals dental clinics now occupy a very important position, and a diagnosis is rarely made in any case until the patient has had his mouth examined by the dental surgeon and any doubtful teeth skiagraphed. All this points to the desirability of a closer coöperation between doctor and dentist outside the hospitals and large cities. The Springfield Academy of Medicine has invited dentists to become members, and already twelve have enrolled. This is a step in the right direction.

It is true that the old-school dentist is of little practical use to the physician. He almost never refers patients to the roentgenologist; he pulls out teeth that might and should be saved; he disregards the common rules of asepsis and has little or no knowledge of the treatment of Riggs' disease. On the other hand, as leading New York dentists tell me, only a small percentage of the physicians are capable of drawing correct conclusions from the conditions they find in the patient's mouth. The doctor's examination of the mouth should include:

- (1) General hygiene. Some mouths are so filthy that, although there are no actual lesions present the patient suffers greatly from toxic absorption.
- (2) Set bridges and crowned teeth.
- (3) Carious teeth and broken off teeth.
- (4) Im-

* Read at the January meeting of the Hampshire County Medical Society.

packed and partly erupted wisdom teeth. (5) Inflammation of the gums. This includes pyorrhea, inflammation of the gum margin around crowned teeth and over partly erupted wisdom teeth. Any one of these conditions may have an important bearing on the general health. If the physician finds or suspects trouble he should, if possible, take his patient to the dentist for a complete diagnosis and consultation, which may or may not have to be supplemented by a visit to the roentgenologist. In this way the patient is more apt to get the treatment he actually needs and may also be saved the expense of an unnecessary radiograph. Permanent bridges may harbor infection and are therefore dangerous. Crowned teeth are to be looked upon with suspicion. In this connection I will mention a case that occurred in the practice of a New York physician.

The patient was a man of 45, in good health. During the month of August he went on a visit to the country and, after exercising violently in the afternoon, slept that night near an open window. In the morning his right arm was so painful that he could not dress without assistance. He was obliged to give up his work and at the end of six months, the arm was practically useless. All forms of treatment were tried, including, of course, osteopathy, without results. His condition remained unchanged until he accidentally broke off the gold crown on his right, upper canine tooth. He immediately noticed a very foul odor and bad taste in his mouth. The following morning he was surprised to find that he could button his collar without help. He lost no time in having the abscessed root extracted and in ten days his arm was practically well.

Here, as frequently happens in this type of mouth infection, there were no focal symptoms and only a roentgenogram would have discovered "the nigger in the wood pile." It is surprising, also how promptly some obscure neuralgias and arthritides will clear up after the treatment of pyorrhea or the removal of an impacted wisdom tooth. Blind abscesses at the apices of devital teeth, without a "gum boil," are often impossible to detect without the aid of the roentgen ray, and this may show nothing but a slight rarefaction of the bone around the apex of the root. In other words these radiographs are at times very difficult to interpret.

H. S. Upson cites cases of insanity and epilepsy in which an impacted wisdom tooth proved to be the determining etiological factor. I will, in this connection, recall to your minds the case of Judge S——'s wife, forty years of age, who, after eighteen years of poor health and nervous debility, became mentally deranged. Her health, mental and physical, were restored after the extraction of an impacted wisdom tooth.

So much has been said and written of late about pyorrhea alveolaris, that the results of recent laboratory research are interesting. These experiments, carried out under the direction of Columbia University, seem to establish the fol-

lowing facts: The bacteriology of pyorrhea is a mixed one, and does not differ qualitatively from that of the healthy mouth. The organisms, while not causing the disease, doubtless complicate and give rise to some of its symptoms. The same may be said of the ameba. This being the case, treatment by vaccines is not to be recommended. Emetine, the much advertised amebicide, has no specific action in this disease; any slight improvement in the condition of the gums following its use, being due entirely to the hemostatic action of the drug. Failure to cure Riggs' disease by the proper mechanical treatment, which consists in the main of curettage, correction of faulty occlusion and attention to mouth hygiene, is due solely to lack of skill on the part of the operator. This, of course, applies to those cases in which the bone destruction is not sufficient seriously to loosen the teeth in their sockets. A well advanced case of pyorrhea with its discolored, loosened and denuded teeth, bathed in pus, is a disgusting sight. It has been estimated that in such cases three or four drams of pus, or more, are swallowed with the food each day. Rosenau has proved this condition of things to be the important factor in the causation of gastric ulcer; the streptococcal infection of the stomach mucosa being either direct or hematogenous. It is true that the gastric juice of a healthy individual is able to destroy these pyogenic organisms, as they are poured into the stomach, and will continue to do so for a variable length of time; but sooner or later, this power is exhausted and pathologic changes take place.

To these mouth infections, or to some other chronic focus of infection, as Billings points out, may be traced systemic diseases such as: arthritis, septic endocarditis, various septicemias, tuberculosis, nephritis, arteriosclerosis, pancreatitis, peptic and duodenal ulcers, furunculosis, keratitis, some cases of appendicitis, chorea, neurasthenia, general malaise and others. There is ample evidence to prove that removal of these foci of infection, wherever located within the body, is essential in the treatment of such diseases.

The effects of long-continued absorption from these chronic foci of infection are not always uniform. In some cases they seem to have no effect at all. In others cause and effect are unmistakable. In either case they unfavorably influence the prognosis and should be eliminated.

Modern dentistry is largely preventive and we are told that the permanent teeth need never become hopelessly decayed, provided that hygiene, diet and treatment are correct from the start.

In our rural schools one finds at least 95% of the children with decayed, neglected teeth; in fact the teeth receive no attention whatever until school age is reached and the visiting doctor discovers trouble. Even when the medical in-

spection of schools is faithfully carried out it still remains to persuade the parents to have the necessary work done and, in most cases, it takes a lot of persuading. On the other hand, children under state control, living in rural homes, are carefully supervised and receive all necessary medical and surgical attention, including treatment of teeth, tonsils and adenoids and eyes. One remedy for this bad state of things in the country would be another R. F. D., Rural Free Dentistry. The importance of mouth infections from an economic standpoint is beginning to be recognized by manufacturing companies all over the country. One large concern in this vicinity has offered to install dental clinics in the Northampton public schools and maintain them for a certain time, until the city is ready to assume control. This is an encouraging sign, but the work should really begin with the education of the pregnant woman.

The U. S. Department of Labor, in its pamphlet: "Prenatal Care," devotes a short paragraph to the care of the mother's teeth during pregnancy; but nothing is said regarding her diet as affecting the development of the infant's teeth in utero; the care of the baby's mouth and teeth before and during the first dentition; when to begin feeding starchy food (dental decay in children being chiefly due to the oral indigestion of carbohydrate foods); and the important fact that inflamed gums render the child more susceptible to infectious diseases.

I have tried to call attention to a few of the more common mouth infections, and their systemic effect, for the purpose of emphasizing the fact that no physical examination is complete which does not include the mouth; that in it, more often than in any other part of the body, are to be found chronic foci of infection, which may seriously prejudice the general health; that, when such foci are present, steps should at once be taken to eliminate them, as the only reasonable course to pursue; and to urge, in the interest of humanity, a closer co-operation between physician and dentist.

THE INCIDENCE OF INTESTINAL ADHESIONS AS A FACTOR IN CHRONIC INTESTINAL STASIS IN THE EPILEPTICS.*

By H. CARO, M.D., PALMER, MASS.

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THE trend of recent epileptologic research has been directed in large part toward the gastrointestinal tract and the glands of internal secretion. It has been away from the brain structures and the postulates built about them, and

once more toward the factors of intestinal irritation and intoxication. The presence of constipation among epileptics has been noted so frequently that again the tendency has been to account for the seizures as due to the absorption of toxic products from the chronic intestinal stasis that may be present.

The exact cause of the chronic intestinal stasis is still much in doubt. Up to the present time the investigations may be divided into two groups, namely, those which declare it due to faulty metabolism of the endocrine system, and those which account for the chronic intestinal stasis by the abnormalities of the intestinal tract that have been found to be present. Under the first group, the over-functioning of the adrenals has been presented as a causal factor. At least one type of epilepsy may be a disease process dependent upon the absorption of irritating substances from the intestinal tract, the inhibition of the smooth muscle fibers of the intestines being due to over-action of the adrenals, because of dysfunction of the pituitary gland or of the pancreas, or because of irritation of the duodenum. This conclusion is based upon animal experimentation and Abderhalden tests for adrenalin.¹ While this view has much in its favor, yet the fact that recent investigation has shown that the Abderhalden test as an index of disease, or of disorder of function of any particular gland, is not dependable, militates against its immediate acceptance.²

The second group of investigators believe that because of mechanical interference, the fecal current is obstructed, and chronic intestinal stasis with absorption of toxic products occurs.³ This interference may be caused by some form of visceroptosis, by a large, flabby, mobile cecum, by retardative angulations at the hepatic or splenic flexures, by redundant sigmoid, by adhesions of both the ileum and the colon, or by exudative periduodenitis and the like. The nature of the toxic products has not been definitely discussed. It has been advocated that the product is a toxin formed by a bacillus,⁴ but this hypothesis has not been confirmed.⁵ These views depend for their substantiation upon Roentgen-ray examinations of the intestinal tract and upon findings at operation.

It was with this latter concept in mind that a review of necropsy records among institutional epileptics, for the purpose of ascertaining the relative frequency of such mechanical causes, was undertaken. But to correlate the presence of visceroptosis, angulations and the like, from necropsy reports is always open to the criticism that post-mortem changes may account for the lesions found. Accordingly, this investigation was limited merely to the presence of fibrous bands and adhesions, and their relation to the condition under discussion. While it may be said that these are the end results of constipation, or better, chronic intestinal stasis, yet it cannot be denied that their existence would

* Read before the New England Society of Psychiatry, March 27, 1917.

prove that this condition in some degree was present.

A total of 250 post-mortem examinations was studied. In 212, no mention was made of chronic focal peritonitis, adhesions, or congenital abnormalities. For the purpose of this paper, these will be considered as essentially negative. Twenty-six cases among this number had cholelithiasis, accompanied in ten by chronic cholecystitis, but without evidence of local peritonitis. Of the twenty-six, only two died before the age of thirty, and over 80% occurred in those dying after the age of forty. In only one case was there a distinct etiologic factor present, namely, enteric fever. Hence the causal factor must be considered to be chronic intestinal stasis, which, by leading to an accumulation of feces in the hepatic flexure, interferes with the flow of bile through the cystic duct and thus produces stagnation in the gall-bladder and the tendency to form concretions. In passing, it may be of interest to note that the incidence of cholelithiasis in this series was 12.5%. This is somewhat higher than the incidence found in general hospitals (5% at St. George's Hospital, London; 9.4% by Naunyn; 6.9% by Mosher).⁶

Of the remaining thirty-eight cases, there were fifteen with chronic perityphilitis, varying from a single band to complete binding down of the appendix. Two of these cases were complicated by cholelithiasis. Chronic appendicitis is usually thought of as one of the factors to be considered in the causation of constipation. But Satterlee states that in a series of one hundred thirty-six cases suffering from chronic intestinal stasis, 25% had the appendix removed, but were not relieved by the procedure. There was a speedy relapse to the former condition.⁷

The following eight cases were examples of the results of pericolic exudations, resulting from chronic intestinal stasis. Firm bands binding down the cecum were found in one case, not complicated by chronic appendicitis. Adhesions in the vicinity of the splenic flexure were found in five cases, three of these involving the spleen also. The descending colon and part of the transverse colon were found to be firmly bound down by fine adhesions in two cases.

Eight cases showed adhesions between the coils of the small intestine, probably the end-result of tubercular peritonitis. Their character could readily cause ileal stasis. Unfortunately, the data at my disposal was not sufficient to determine the relationship between the onset of the seizures and the abdominal condition.

There remain six cases where there were adhesions involving the gall-bladder, duodenum and transverse colon. Two were complicated by cholecystitis and cholelithiasis, and the adhesions present were probably the result of a local peritonitis following the gall-bladder infection. The remaining four cases were not complicated by gall-bladder disease, or by gastric or duodenal ulcer. In these, there were found fine,

web-like adhesions extending from the gall-bladder to the hepatic flexure and involving the pylorus and first part of the duodenum. They may be classified as congenital transduodenal bands. Harris⁸ believes that these bands are the remnants of the anterior mesentery of the upper gut. Persisting after the rotation of the stomach and duodenum has occurred during fetal life, they remain stretched across the duodenum and pylorus, extending from the inferior surface of the liver to the hepatic flexure. These bands may cause interference with the flow of the fecal current, resulting eventually in chronic intestinal stasis. They are precursors of—rather than the result of—the condition under discussion.

The last case of this series was one of umbilical hernia with adhesions to the small intestine. This lesion, however, definitely occurred many years after the onset of the epileptic seizures, and need not be considered further.

SUMMARY.

Intestinal adhesions and bands of varying degrees and etiology were described in thirty-eight cases in this series. These divide themselves into two groups: (a) those that may be considered to be a factor in the causation of chronic intestinal stasis, and (b) those that may be considered to be the result of this condition.

TABLE I.

Adhesions causing chronic intestinal stasis	12
Congenital transduodenal bands	4
Inter-intestinal adhesions probably due to tubercular peritonitis	8
Adhesions resulting from chronic intestinal stasis	25
Chronic perityphilitis	15
Pericolic exudations	8
Due to gall-bladder disease	8
Adhesions due to hernia	1
	38
Necropsies considered as negative	212
	250

In Group A, the four cases of transduodenal bands must be placed, for being congenital, they antedate the onset of the epileptic seizures, and from their position could easily be a strong factor in producing chronic intestinal stasis. If the conclusion that the eight cases of adhesions between the small intestines were the end-results of healed tubercular peritonitis is correct, then these may be considered under this heading, for from their very nature they would cause intestinal stasis of varying degrees.

The remaining twenty-five cases (the case of umbilical hernia being excluded) must be placed under Group B. The adhesions about the appendix may be the result of pericolic exudations due to chronic intestinal stasis, as well as the result of a more acute process. Adhesions involving the remaining portions of the large intestine readily come under this heading.

In conclusion, it is evident that intestinal adhesions and bands play a rather small part in the causation of chronic intestinal stasis in the epilepsies. Excluding those lesions due to previous acute abdominal infection (*i.e.* tuberculosis), as well as those due to pericolic exudations resulting from the stasis present, there are left but four cases (*i.e.* congenital transduodenal bands) in a series of two hundred fifty necropsies, where the clinical symptom may be said to be the result of the lesion found at autopsy.

REFERENCES.

- ¹Cotton, Corson-White, Stevenson: "Pathogenesis and Treatment of Epilepsy." New York Med. Jour., Vol. civ, No. 12.
- ²Singer, H. D., and Quarts, W. B.: Archives of Int. Med., Vol. xviii, No. 4, p. 529.
- ³Reed, C. A. L.: "Diagnostic Methods and Pathologic Constants in Idiopathic Epilepsy." Jour. of A. M. A., Vol. lxvi, No. 5.
- ⁴Powers, H.: "The Role of Gastric and Intestinal Stasis in Some Cases of Epilepsy." BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. cxxx, No. 6.
- ⁵Reed, C. A. L.: "The Bacillus Epilepticus." Jour. of A. M. A., Vol. lxvi, No. 21.
- ⁶Caro, H. and Thom, D. A.: "A Bacteriological Study of the Blood of Seventy Epileptics." Jour. of A. M. A., Vol. lxvii, p. 1088.
- ⁷Rollston: "Diseases of the Liver." 1905, p. 703.
- ⁸Satterlee, G. R.: "Chronic Intestinal Stasis." Am. Journal of Med. Sci., Vol. ciii, No. 5 (No. 535), page 727.
- ⁹Harris, M. L.: "Constriction of the Duodenum Due to Abnormal Folds of the Anterior Mesogastrium." Jour. of A. M. A., Vol. lxii, p. 1211.

RESPIRATORY SUCTION AN AID IN SURGICAL SHOCK.

By W. T. PORTER, M.D., BOSTON.

[From the Laboratory of Comparative Physiology in the Harvard Medical School.]

In dealing with surgical shock, it should always be borne in mind that life and death here depend on a relatively slight change in the arterial pressure. The diastolic pressure may fall from normal to the critical level with little or no danger—a further fall of even 10 millimetres is fatal, unless skilled assistance be at hand. Conversely, in dangerous shock, lifting the diastolic pressure 15 millimetres will save life, as a rule.

I have elsewhere insisted on the importance of the inclined position. In shock, the sufferer bleeds into his own abdominal veins. They take the blood from the heart and brain. The inclined position feeds the heart and brain by gravity. But gravity is slow and death draws swiftly on. How may the wounded wait and still be safe? Time may be gained by adrenalin and by injecting normal saline into the veins. Both tend to fill the heart; one by narrowing the arterial outlets, the other by adding to the volume of the blood. Neither is a logical remedy, for neither brings back the blood from the congested veins into the arteries and thus into the feeding capillaries. The veins store but do not feed. We should pump the blood from these fatal wells into the heart. Such is the logical ideal.

I propose a remedy which satisfies this ideal. I propose the thoracic pump.

When the diaphragm descends in inspiration, the cavity of the thorax is enlarged. It is as if a squeezed rubber bulb were expanded under water; the surrounding fluid enters the sucking ball. So do surrounding fluids enter the chest. The air is sucked in through the trachea and blood is sucked in through the veins. In man, this suction may balance a column of mercury 30 millimetres high, equal to a column of blood 15 inches high—a value one third the total normal diastolic arterial pressure. Without this respiratory suction, a weak arterially-toned man would faint every time he stood up. It is this potent force I propose as a life-saver in traumatic shock.

If the normal contractions of the diaphragm so aid the circulation, its powerful contraction will aid still more. Powerful and frequent contractions are within our command. We have but to increase the carbon dioxide in the inspired air to call forth deep and rapid respiration. The necessary amount of carbon dioxide is not injurious. To an animal it can be given from a gas tank discharging through a Wolff bottle into a T tube, the short limb of which is attached to the tracheal cannula. In man, re-breathing may be employed. The patient may breathe in and out of a rubber bathing cap, previously inflated with a Davidson syringe. When oxygen hunger approaches, the cap is removed. In a moment or two the experiment may be repeated.

In the course of the past two months, March and April, I have with carbon dioxide produced deep and rapid respiration in many animals in whom surgical shock had been brought on by injecting oil into the external jugular vein. The diastolic arterial pressure in these animals was often dangerously low. In every case, the diastolic pressure rose 15 to 30 millimetres of mercury. Such a rise, for example, from 50 to 70 millimetres, carries the pressure out of the danger zone.

The author has made as yet no observations on men with shock. He is now on his way to France to make these observations upon the wounded. There is every reason to believe that carbon dioxide respiration in men will cause at least as great a rise as in animals. In that case, we shall have an effective and easy method for the treatment of traumatic shock in man.

ASSOCIATION OF AMERICAN PHYSICIANS.—The annual meeting of the Association of American physicians was held at Atlantic City, N. J., on May 3, 4 and 5. At the opening session, Dr. Francis W. Williams of Boston was elected president for the ensuing year.

Medical Progress.

PROGRESS IN GYNECOLOGY.

By STEPHEN RUSHMORE, M.D., BOSTON.

Chancre of the Cervix.

Wile¹ and Seneare report two cases of chancre of the cervix uteri. Judging from the paucity of literature on this subject, the lesion is rare, although the reports of those who have made systematic examinations in cases of recent syphilitic infection show the primary sore in the cervix in as high as five per cent. It is doubtless more frequent than is generally thought, and for anatomical reasons is likely to remain hidden and unrecognized.

The lesion presents certain difficulties in diagnosis on account of its inaccessibility and on account of the structure of the cervix. It is indurated, painless, usually single; no functional disturbance is observed in the majority of cases. It occurs as a flat purplish erosion, somewhat sharply raised above the surrounding tissue, not infrequently covered by a pseudomembranous exudate. The purpuric or hemorrhagic border is usually demonstrable. According to the size there may be slight or considerable discharge.

Differential diagnosis includes the consideration of the following conditions: simple cervical erosions, chancroid, herpes simplex and carcinoma. Differentiation is usually easy except in carcinoma, where, on account of the friability of the tissue, diagnosis may be possible only under the microscope. In both of the cases reported, living spirochetes were demonstrated with the dark field in smears from the suspected lesion.

Operations on the Cervix.

The question of what harm may result from a torn cervix has not been answered as yet in such a manner that discussion has ceased. But if, as some writers claim, such lacerations result in disturbances of function and possibly give a point of lowered resistance for the development of cancer, they should be removed. Accepting this dictum, Boldt² describes a simple operation for repair, denoting it as intermediate trachelorrhaphy. By this is meant an operation about six weeks after the injury, at a time intermediate between the fresh injury and the firm scar which ultimately forms. The patient is placed in the lithotomy position, and the usual disinfection employed. A general anesthetic may not be necessary. The cervix is exposed and drawn down. With a narrow sharp scalpel a "film of tissue is scraped off the torn surface, taking particular care that the angles of the tear are made raw." Sutures of chromic catgut are then passed so as to include the entire depth of the tear. No after-treatment is necessary and the patient may be up and around as usual after the operation.

The operations for laceration of the cervix are generally thought to be simple and efficacious. The report by Leonard from Kelly's clinic showed results that "were quite unexpected and in many ways disappointing." This substantiated the views of Sturmdorf³ who has sought to obtain better results.

First, as to the significance of cervical lacerations for the patient. They are important because they present portals of entry for infection which may manifest itself in disturbed function of the uterus, tubes and ovaries. The best time, then, to treat lacerations is when they are fresh, with which view agreement is not general. The interference with uterine function, apart from the more obvious gross infections, is interference with the characteristic contractile phenomena of the uterus, whereby at all times the normal circulatory balance of the uterus is regulated. The exposition of views as to the function of the cervix is interesting, but, as the author says, the function remains generally unrecognized. Perhaps this is due to the lack of supportive evidence.

But the practical problem is: if amputation seems advisable, to get the smallest possible wound surface, by bringing the edge of the vagina as close as possible to the edge of the cervical mucous membrane, after removing as much as possible of the diseased cervical mucous membrane. Sturmdorf makes a suggestion that is worth noting. First a circular amputation is performed with ample vaginal flap, removing a cone of cervical tissue nearly up to the internal os. The vaginal cuff is drawn into the depression in the cervix by sutures in the mid line anteriorly and posteriorly. The placing of these sutures is the important point. It may be best described without a diagram by using a silkworm gut suture with a needle on each end. The suture grasps the anterior flap of vaginal mucous membrane at the mid line, the needles passing from the epithelium to the raw surface. The needles then pass through the anterior wall of the cervix from within outward, entering just below the edge of the cervical mucous membrane, passing through cervix and vaginal mucous membrane and emerging at the base of the flap. Care must be taken with the anterior suture not to penetrate the bladder. This mattress suture draws the vaginal mucous membrane up into the new cervical canal and only a second suture posteriorly may be needed. These stitches represent a distinct contribution. The author leaves them in for two weeks when he says they can be easily removed.

Displacements of the Uterus.

It has been acknowledged that trauma may cause an acute retro-displacement of the uterus. But in any given case in which displacement is found after an accident, it may be difficult to prove that the displacement was the result of

the injury. Barringer⁴ reports a series of six cases in which the trauma seemed beyond reasonable doubt to have been responsible for the displacement. Often the symptoms are misleading and insidious and hence the condition is overlooked. The history shows that the violence was of a nature to have produced such a displacement,—falls on the back, falls in the sitting position, or sudden unexpected strains enormously increasing intra-abdominal pressure. In all of the cases there was immediate disability lasting from a week to several months. Five of the six patients were nullipare.

The symptoms may be very vague and ill defined, not suggesting the uterus as a possible etiological factor; or they may be fairly typical and present the following features. Pain is present in the sacral or sacro-iliac region. It is sometimes sharp and knifelike, in the hypogastrium or radiating to the groins or thighs. Bladder irritability is often one of the complaints, but there are no changes in the urine. There is some change in the type of menstruation. The posture and gait are affected, Barringer thinks characteristically, the patient endeavoring to protect herself from any unnecessary jarring or motion, walking and holding herself carefully. On vaginal examination, displacement of the uterus is found, generally a retro-displacement, rarely with incarceration, and occasionally with moderate degree of prolapse.

The mechanism is simple: the uterus is a movable organ and when the body of the patient stops on the arrest of the fall, the uterus continues to move to a point where the elasticity of the ligaments is overstretched, and they thus fail to restore it to its normal position. Distention of the bladder, relaxed ligaments of the uterus and empty sigmoid and rectum favor such displacement.

The treatment, replacement, if applied early, gives immediate and permanent relief. Occasionally the uterus returns with a snap to its normal position. If replacement is delayed, restoration is more difficult to accomplish and to make permanent and the sequelæ of displacement are more fully developed.

Neel⁵ presents the description of an operative procedure for retro-displacement of the uterus. It is a new combination, would seem to be based on well-known and long-tried principles and has given good immediate results in something over one hundred cases. Suggested by Kelly, it was developed to its present form by Neel and slight modifications will doubtless be made by others.

In the first place it is an operation for retro-displacement of the uterus and not for prolapse, yet it may be useful in slight degrees of descensus. It pulls the fundus forward and the cervix back. The latter is accomplished by running a non-absorbable suture in the utero-sacral ligament on each side. Tying the ends of each suture bunches the ligament by a sort of purse-string, and while it cannot give much support,

assists both by lifting the cervix and by drawing it toward the sacrum.

The fundus is kept forward by a non-absorbable suture, which penetrates the fascia, muscle and peritoneum on each side of the median line and catches up the round ligament not far from the uterus. The suture is introduced so that the knot lies beneath the fascia of the rectus. The new feature is to catch, with small bites, the peritoneum from the point of perforation of the rectus along the abdominal wall to the neighborhood of the internal ring, then along the round ligament to the final point near the uterus. Thus by one suture the round ligament is caught to the anterior abdominal wall and the space between distal portion of the round ligament and the abdominal wall is obliterated. This modification of the Ohlshausen operation is in the direction of simplicity and is to be commended.

Prolapse and Spina Bifida Occulta.

Ebeler⁶ reports a series of cases of prolapse of the uterus and vagina and points out, as a possible etiological factor, a nerve defect. Halban and Tandler, representing one view of prolapse, regard the pelvic musculature as the all-important fixation apparatus of the uterus, and explain congenital prolapse as due to spina bifida. Martin, representing a second view, regards the connective tissue as the decisive factor in uterine and vaginal support. Ebeler regards congenital prolapse as due to spina bifida, often of the occult type, and also attributes to similar nerve injury the acquired form. Under occult spina bifida Ebeler groups malformations of the bony canal which show externally no cleft nor a cystic tumor.

The normal sacral hiatus is about two centimeters in diameter and lies at the level of the fifth sacral vertebra, but may extend somewhat higher. In spina bifida various degrees of defect are present and may be in any portion of the canal, though occurring chiefly in the lumbosacral region. To this condition are to be attributed various congenital or post-natal deformities, as certain paralyses of the lower extremity and deformity of the foot, and sometimes enuresis nocturna.

Twenty-eight cases of vaginal or uterine prolapse were studied with care, especial attention being directed to the genital, neurological and x-ray examinations. In twenty-three, spina bifida was found and in five no evidence of such defect could be detected. The degree of prolapse varied from slight vaginal to extensive vaginal and total uterine. In seven cases of total prolapse, young women non-parous or having had but few children, spina bifida was present. Neurological findings were not constant but all showed some deviation from normal, in heightening, diminution or loss of reflexes. In five the fovea coccygea was marked. In twelve cases of prolapse of the vagina, older multi-

paræ, spina bifida was present, varying in extent with various forms of nerve disturbance.

In the other four, two cases of cystocele, one of recurrent prolapse and one of descensus of the vagina, all older multiparæ, spina bifida was present with nerve disturbances. The most constant sign was the fovea coecygea, found in seventeen of twenty-three. In none was there hypertrichosis which has been described as an occasional feature. As a control, twenty-eight gynecological patients without prolapse were examined and in only three were there signs of spina bifida occulta.

He concludes, then, that injury to the nerves, more or less extensive, produces insufficiency of the muscular apparatus of the pelvic floor so that it gives only inadequate resistance to injury.

Some Results of Ventrofixation of the Uterus.

Muret⁷ discusses some of the results of direct abdominal ventrofixation of the uterus. As is well known, if such fixation is superficial, the uterus may in the course of time resume its normal position in the pelvis, acquiring also normal mobility by the stretching of the attachment. If, however, the fixation is complete and the uterus becomes in fact a part of the abdominal wall, considerable mobility may be present but it is not normal. If the abdominal wall is relaxed, and the uterus is large, the wall may be pulled in by the weight of the uterus; or, if the patient strains or coughs there may be an actual elevation of the anterior vaginal wall due to the traction by the uterus which is elevated and pulled forward by the protruding abdominal wall. This paradoxical result of straining was recently seen and felt in several of Muret's cases. If, however, the patient wore a corset which held in the abdominal wall, straining would result in an approximation of the uterus and bladder to the vulva.

Another occasional consequence of ventrofixation, especially if operation on the perineum and posterior vaginal wall is not adequately performed, is a descent of the cul-de-sac and a true enterocele, covered by posterior vaginal wall. The explanation of this condition following ventrofixation is that the displacement of the uterus forward directs the intra-abdominal pressure more effectively against the posterior vaginal wall in the cul-de-sac and stretches this non-resistant membrane. Such patients can be cured only by extensive perineal operations, almost obliterating the vagina.

On account of the danger from a median ligament following suspension of the uterus by the fundus, Muret advocates for prolapse so firm a fixation of the fundus that pulling out is impossible, and the formation of a suspensory ligament is out of the question. He discusses a series of cases of intestinal obstruction following the ventrosuspension.

Operations for Prolapse.

Vineberg⁸ has devised a modification of the interposition operation for prolapse to make it applicable in cases of enlarged uterus. Here it is ordinarily not indicated. The steps until delivery of the fundus under the bladder are the same as in the usual interposition. The modification consists in amputating, after delivery, such portion of the fundus as seems superfluous. The stump of the body and the cervix are then used as in the usual operation, suturing the top of the stump close under the urethra to the subpubic fascia. Vineberg has performed the operation for several years with gratifying results.

Wertheim⁹ contributes a modification of or addition to the interposition operation for prolapse of the uterus. He had already suggested suturing the body of the uterus to the levators as a means of giving greater security, and the present modification concerns the treatment of the cervix. Schultze called attention, years ago, to the fact that fixation of the fundus does not take the place of the normal supports of the uterus if these are weakened. The various operations for shortening the uterosacral ligaments, and otherwise giving support to the cervix, are an acknowledgment of the truth of Schultze's view.

In some cases of prolapse to which the interposition operation is applicable, cervical support is especially needed. Wertheim's device is to deliver the fundus as usual, making strong traction to expose the uterosacral ligaments. These are then united by linen threads to form a kind of sling, which is slipped under the cervix and on which it then rests. To accomplish this second step, the cul-de-sac is opened behind the cervix, the sling drawn down under the vaginal portion and sutured to it, and the cul-de-sac closed. The immediate result is excellent. The operation was performed at first only in cases of extensive prolapse; later in those of less displacement and recently for retro-deviations without any other operation, such as ventral suspension or fixation. Sufficient time has not elapsed for permanent results to be determined, but the immediate effect is entirely satisfactory.

After-Results of Curettage of the Uterus.

Girvin¹⁰ reports three cases which show bad after-effects from curettage of the uterus. The symptoms suggest the possibility of too nearly complete removal of the endometrium and in one case there seemed to be stenosis of the internal os, from adhesions which were, however, easily broken up by the Goodell dilator at the second operation. Menstruation was much diminished in amount and duration in one patient, the flow appearing only part of one day. It is easy to understand how vigorous and prolonged use of the sharp curette could remove the endometrium beyond the possibility of re-

generation, and this danger should be kept in mind. If one opens a uterus and notices the ease with which the endometrium can be removed by the curette, one sees that skill, and not force, is the chief factor in a successful curettage.

Blood Pressure with Myomata.

Taylor¹¹ and White studied a series of consecutive recent cases of fibromyoma of the uterus, in the gynecological division of the Roosevelt Hospital, in which blood pressures were recorded. Their report confirms statements found elsewhere in the literature,—that no definite relation is shown between myomata and increased blood pressure, and that the removal of the tumor, or the uterus and the tumor, has no definite effect in those cases which happen to have an increased blood pressure.

Menstruation.

Novak¹² studied a series of one hundred and fifty-nine cases in which the endometrium was removed at operation and in which the regular menstrual periodicity was present, as indicated in the complete and exact menstrual histories. As the chronology of the menstrual cycle was an important point to be investigated, all the above-mentioned data were necessary. The series includes many types of pelvic lesion, but the menstrual cycle was undisturbed.

The cases are arranged in several groups and studied from several points of view, with the following conclusions. The views expressed by Hitschmann and Adler as to the cyclical histological variations in the endometrium in different stages of the menstrual cycle are confirmed as correct, in general. It seems to be true that the more profuse the menstrual flow, the more marked the local hypertrophic changes in the endometrium; the less abundant the flow, the less striking is the local reaction.

An important exception to this rule occurs in cases of so-called congenital antelexion. The endometrial changes are marked, indicating increased ovarian activity, but the flow is often scanty, perhaps due to a deficiency in the uterus itself,—some local factor which prevents the passage of blood from the vessels toward and into the uterine cavity. Perhaps the engorged mucosa, not depleted in the usual manner, acts as an irritant to the uterine musculature and gives rise to spasmodic and painful contractions.

The studies tend to indicate that the physiological factor is a more important element than the anatomical, in the consideration of menstrual disturbances. Novak suggests that the sterility so frequent with congenital antelexion may be due to a physiological rather than to an anatomical defect in the uterus.

Statistics of Menstruation.

The difficulty of obtaining exact histories is shown in the experience of Sanes,¹³ who gives

a résumé of four thousand five hundred menstrual histories, many of which were taken again at a later time for confirmation. What is regular to one patient would seem quite irregular to another, and sometimes one finds the expression "regular, every four weeks, always on the seventh of the month."

This large group of cases of which the histories were taken, with some care to exclude opinion, as far as possible, and find out actual facts, gives a fair idea of the phenomena under discussion. Some conclusions may be noted. Seventy-five per cent. of the patients menstruated regularly and twenty-five per cent. irregularly. The most common regular type met with was that of twenty-eight days, which constituted seventy-two per cent. of this group. The thirty-day type followed next in frequency, with only three and eight-tenths per cent. and the twenty-one day type with three and three-tenths per cent. In some of the "thirty-one day" type the menstrual flow appeared monthly on the same day, independently of the number of days in the month. The most common irregular types were three to four weeks, then four to five weeks, two to three weeks, five to six weeks.

The most common ages of onset, in order of their frequency, were thirteen, fourteen, fifteen, twelve, sixteen. The age of onset did not show any relation to the regularity or irregularity of menstruation. The earliest age of onset in the series was nine years, and the latest twenty-four years.

The most common duration of menstrual flow was three days; then four to five days, three to four days, five days, seven days and four days. The irregular type of menstruation showed a larger percentage of long durations and a smaller percentage of short durations than the regular type.

The quantity of flow in forty-five per cent. of women was normal, in seventeen per cent. scant, in thirty-seven per cent. profuse. Patients with hyperthyroidism showed a very high percentage of profuse menstrual flow (sixty-five per cent.). Irregular patients showed a higher percentage of profuse flow than did the regular ones. Clots were very frequently found in the menstrual discharge, and they did not seem to be influenced by menstrual irregularity.

Forty-seven and four-tenths per cent. of the women suffered from dysmenorrhea (if the term "dysmenorrhea" is to convey the idea of discomfort). In retro-displacements, the percentage was found to be fifty and four-tenths per cent. In fifty per cent. of the dysmenorrhea cases the symptoms appeared during the flow, in twenty-nine per cent. before, in seventeen per cent. before and after, and in the rest during and after. Most frequently the dysmenorrhea appeared the day before the flow, then the first day of the flow, but it varied considerably.

Improvement in menstruation was frequently noticed with advance of menstrual life. After

marriage and after childbirth the menstrual periods became more regular and the dysmenorrhea improved or disappeared entirely.

The most common ages of the menopause, in the order of their frequency, were given as fifty, forty-six, forty-eight, forty-seven, fifty-one, forty-nine, forty-four, forty-five, fifty-two. The length of menstrual life was most commonly given as thirty-seven years, then thirty-five and thirty-three. Sixty-eight reported a menstrual life of thirty years or more. The very early and the very late onset of puberty showed rather early menopause.

Operation for Menstrual Disorders.

Carstens¹⁴ discusses those cases of menstrual disorder, dysmenorrhea or menorrhagia, which are of such a character that the patient is incapacitated during menstruation. For such when less radical methods have failed, removal of the ovaries has been suggested and is often the operation recommended. The number of cases in which a radical procedure is necessary is not large, but the condition of the patients is pitiable. Carstens advocates removing the uterus and leaving one or both ovaries, as the relief is as great as if a complete operation were performed, and the general disturbance is less marked. Rarely a second operation is necessary because of later disease in the ovary, but, if indicated, is without great risk.

Uterine Hemorrhage.

Palmer Findley¹⁵ has prepared a collective review on uterine hemorrhage, which is a good résumé of the recent literature, and as such is hardly suitable for further abstracting and condensation. It indicates, that while certain views as to the cause of uterine hemorrhage are gradually becoming less frequent, there is not at present sufficient evidence to give the basis for the formulation of a satisfactory explanation. At the present time, to say that, in the absence of anatomical evidence of disease, the hemorrhage is due to some dysfunction of the glands of internal secretion, is no explanation; it is merely a suggestion as to where a possible explanation may lie. Here are fields for investigation and problems in abundance.

In the review, hemorrhage from obvious causes, as cancer and myoma, is considered, and the appropriate therapy outlined. A comprehensive, but not exhaustive, bibliography follows.

Changes in the Endometrium.

Owing to the peculiar changes which normally take place rhythmically in the endometrium, it is sometimes difficult to determine whether inflammation is or is not present. Endometritis, which was formerly regarded as very frequent, is thought by some to be non-existent in the absence of bacterial infection. Perhaps it is more accurate to regard the bacteria as the cause of

acute endometritis. Warner¹⁶ reports a series from which all "inflammatory cases" were excluded. All the patients were under forty years of age, and the operations were for more or less simple conditions. A careful study of specimens, referring also to the case histories and the menstrual charts, caused a revision of some of the clinical diagnoses. Of one hundred and twenty-seven cases, sixteen were found to be not inflammatory—an error of twelve per cent. Of twenty-five patients everted in the resting stage of the menstrual cycle, with a clinical diagnosis of endometritis, all were found to have chronic endometritis, on microscopical examination. This indicates that in the absence of the changes incident to menstruation, the diagnosis can be made with much greater accuracy.

Studying the character of menstruation in connection with the histology of the endometrium, Warner confirms the opinion that the changes in the endometrium are not characteristic of the menstrual deviations, thus suggesting that the cause of abnormal menstruation lies often outside the uterus.

X-Ray in Fibroid Tumors.

Pfahler¹⁷ reports his experience, extending over a period of nine years and comprising forty-six cases, in the treatment of myoma of the uterus with the x-ray. The method is no longer to be regarded as new and untried, for large series of cases have been reported. After studying the results, the question is simply, in what cases is the x-ray suitable?

The most important indication is hemorrhage due to myoma, but even this requires some qualifications, and these are given as follows: The treatment is indicated in all cases of myoma in older women in whom there is already a well-advanced anemia, which may be the cause of an anemic heart. Also, in all elderly or young women in whom there is marked heart disease (organic), diabetes mellitus, chronic nephritis, marked lung disease, or goiter with cardiac symptoms. All patients beyond the age of forty should try this treatment unless there is a definite contraindication.

As to contraindications, he says the following groups are not suitable: (1) all cases in which the tumor is pedunculated, or in which the tumor can be excised without endangering the reproductive powers of the patient; (2) myomata that have undergone malignant degeneration or that have become gangrenous; (3) myomata associated with disease of the adnexa; (4) myomata which are producing such marked symptoms that the patient is endangered more by waiting two or three months for results of roentgen-therapy than by the immediate results of operation.

A judgment as to the probability of cure must be based on critical reviews, in which the dosage and method of treatment, as well as the kind of case, are taken into consideration. With im-

improvement in technic, even though the scope of the treatment is extended, the percentage of cures rises to over ninety, but it is not clear whether this refers to cure of hemorrhage or disappearance of tumor. Pfahler inclines to the view that all of the tumors will ultimately disappear.

Subsequent degeneration, though possible, seems actually to have been so infrequent that it need not be feared. Should any complication demanding operation occur during treatment, it can be performed as well as if no x-ray treatment had been undertaken. The possible dangers are very slight, with improved technic, and the method seems to Pfahler to be one in which there is everything to be gained and nothing to be lost.

Public Education as to Cancer.

Kennedy¹⁸ makes some suggestions as to the education of the public in the matter of the early recognition of cancer of the uterus. They are less as to the manner of education than as to the matter. He says: "No diagnostic responsibility should be put on the public."

The symptoms of advanced cancer are well known, but few, even among physicians, can make a diagnosis in the early cases from the symptoms alone. Some basic facts are stated by the cancer committee of the Clinical Congress of Surgeons. "Cancer is a very common malady. In the beginning it is a strictly local process and not a blood disease. It is easily cured when removed early in its course. It is incurable in the later stages."

The first thing that should be taught is in what normal menstruation consists. Women should know that even slight deviations from this normal may be due to serious disease, perhaps cancer. The only way to find out is to go to a physician and have an examination, if he thinks it is necessary, because examination gives the only way of making a diagnosis. Mistaken ideas, false notions, prejudices and timidity on the part of the patient may lead to disaster. It has done so in the past.

It seems as if a far greater number of cures could be obtained by operation on early cases, and this is possible only through the intelligent cooperation of women with their physicians. The duty of the physician is also clear; expectant treatment until the classical symptoms are well developed often proves fatal.

Cancer and Mesothorium.

Baisch¹⁹ reports some results of the mesothorium treatment of cancer of the uterus. In his series were one hundred cases followed personally and under control, one and three-quarters years to six months after treatment. The cases fall into three groups: (1) completely inoperable, with carcinomatous infiltration to the pelvic wall; (2) borderline operable cases in which carcinoma was outside of the uterus, but did not

extend to the pelvic wall; (3) operable cases in which the disease was limited to the uterus. In this third group belong the early cases in which only a small part of the vaginal portion of the cervix was involved.

In the first group were forty-three cases. Of these, twenty had died, twenty-two were uncured, one was cured. This case was a recurrence after abdominal operation. It is the only inoperable case which was cured, and suggests that the infiltration was inflammatory. In some of these cases, although the carcinoma disappeared superficially and was no longer to be detected on removal of tissue for microscopical examination, the deep infiltration increased, the pains became worse, and the disease finally proved fatal. In others there was a marked improvement in the general as well as in the local condition, and some even regarded themselves as cured because of the disappearance of the bleeding and discharge, and the improvement in the general health. As a palliative treatment for inoperable carcinoma, there is, according to Baisch, nothing better known than mesothorium and radium.

In the second group were twenty cases. The operative results in this group are well known,—high primary mortality, poor permanent results. Of this group four had died, six were uncured, ten were cured. Three of the cured cases were recurrence after vaginal hysterectomies. Here the results are most striking, for there was complete macroscopical disappearance of growth, even on careful palpation.

In the third group were thirty-seven cases. Of these, five had died, four were uncured, and twenty-eight were cured. Some of the cases that died proved not to be early, as there was metastases to glands. Of the early cases, eight in number, all were cured, twenty-two to six months.

The results of operation and of mesothorium treatment are next compared. In one hundred cases of cancer, fifty-seven per cent. were operable, which is about the operability now generally found. Of these, nine died. If one reckons the primary operative mortality is sixteen per cent., which is too low rather than too high, then by the operation alone there were lost as many patients as by the whole of the non-operative treatment, which in itself kills none. There were thirty-nine patients temporarily healed, that is, about sixty-eight per cent. free for one year, which compares favorably with the results after operation. Winter, in one hundred recurrences, found one hundred and fifteen in the first year, and thirteen in the second. So that for the first year, mesothorium gives a distinct improvement.

Baisch draws the following conclusions: (1) In completely inoperable cases mesothorium and radium fail to cure, but they give the best palliative therapy. (2) In operable cases the temporary results are better than by operation over

the same period of time. (3) In operable cases the less advanced the growth, the more favorable the prognosis.

Cancer and Radium.

Kelly²⁰ and Burnam report more favorable results from the use of radium in cases similar to those described by Baisch. The classification is somewhat different. They have three groups: (1) operable, "growth not fixed to pelvic wall, on either side, has not caused hydronephrosis, not associated with pelvic pain"; (2) "by inoperable cancers are meant those associated with general metastases, those firmly fixed to one or both pelvic walls, those extensively involving the bladder, vagina or rectum"; (3) recurrent inoperable growths. That the two series of cases are not exactly comparable is shown by the operability, only fourteen of the series of two hundred and thirteen cases of Kelly and Burnam being reckoned as operable. Their results are more favorable.

Of the fourteen operable cases, ten were operated upon and treated prophylactically with radium. All were living and well from three years to six months after the treatment. The same was true of the four cases which were not operated upon on account of general contraindications. Of one hundred and nineteen inoperable cases, fifty-three were clinically cured, one hundred and nine markedly improved, thirty-seven not improved. But nothing is said of any deaths.

In both series of cases the time of observation is still too short to justify more than qualified conclusions as to the efficacy of radium.

Some workers with radium and mesothorium are less enthusiastic. Ascheim²¹ and Meidner report in detail a series of seventeen cases on which they comment at some length. Their conclusions are, in brief, that radiotherapy is the best palliative method of treatment for inoperable or otherwise inoperable tumors. If the case is operable, operation is advocated strongly, on account of the unfavorable results in two cases in which, at the request of the patients, radiation was employed. Operation is by no means the antiquated therapeutic resource that some advocates of radium therapy would have it considered. The time for operation is as soon as possible, and according to their experience, radiation before operation is best omitted.

Cancer and X-Ray.

Case²² presents a summary of the roentgen treatment of uterine carcinoma, dealing with results and present technic. The study is based on reports in the literature as well as on his own experience, and gives a comprehensive and apparently just appreciation of the method.

New developments in roentgenology, in the production of more powerful apparatus and in the refinement of therapeutic methods make the results now obtainable scarcely comparable with

those which were attained ten years ago. Massive doses, at least one hundred times the maximum dose then considered safe, may now be used, but such doses, if employed without skill, are extremely dangerous.

Radium and roentgen therapy are very closely related both as to theory of effect and principles of application. Some consider radium far more satisfactory in the treatment of deep carcinoma, while Bummm is a strong advocate of the use of the x-ray in such cases. By the use of the most recent advances in technic, results with the x-ray may really be considered brilliant. As to cure, sufficient time has not elapsed for conclusions as to the permanent results of x-ray or radium.

If the dosage is not sufficient to cause damage to the adjoining tissue, there is danger from inadequacy. Stimulation of cancer may result from small doses—a very real danger, borne out by histological examination of a specimen in which there was superficial necrosis, but deep stimulation of growth. Though it is not proper to speak of the selective action of the x-ray on the malignant growth it is true that carcinoma tissues are quite sensitive to the x-ray. Cancer cells may be destroyed with no sign of injury to the surrounding tissue; but in comparison with some other tumors, for example, lymphomata and certain sarcomata, carcinoma is less sensitive.

Certain untoward effects are observed in spite of all the precautions at present known. They are, however, relatively unimportant compared with the serious and disagreeable nature of the symptoms of carcinoma. Some of these effects are due to the rays themselves and to the changes brought about in the room by the high tension currents. Others are due to acidosis brought about by the absorption of the products of cell destruction. Bladder irritation is occasionally distressing, but rectal tenesmus is less frequent than after the use of radium.

Late skin effects must be kept in mind, occurring in cases in which there was no visible sign of injury just after the treatment. The latent period of such affections seems to have been greatly lengthened by improved methods of filtration, but the untoward changes have been encountered as late as a year and a half after irradiation.

The opinion is rather widespread, that only inoperable or borderline cases should be subjected to x-ray treatment. For the rest, operation is still the method of choice, but palliative results have been most gratifying. In case of operation, there should be post-operative radiation just as thoroughly as if no operation had been performed.

Cancer and Operation.

The use of the Percy cautery as a preliminary to removal of the uterus, in operable cases of cancer of the uterus, is recommended by Clark.²³

If the cancer cells are destroyed by the heat—and those on the surface certainly are—this method would seem to diminish the danger of implantation metastases by manipulation of the growth during removal. Clark advocates its use immediately before the radical operation, employing the cautery as recommended by Percy, with the hand in the abdomen as a control of the heat.

Hutchins²⁴ calls attention to the discredit which has been and will be brought on radical operating for cancer of the cervix if that method of treatment is not appropriately applied. To determine whether the cancer is or is not eradicable, it may be necessary to open the abdomen. In doubtful cases the competent operator will not hesitate as to this step. But when the abdomen is open, it is possible to determine, with a reasonable degree of certainty, that the growth can or cannot be removed. It is at this point that Hutchins advocates "conservative radicalism."

If the involvement is such that complete removal of the cancer, not simply of the uterus, is improbable, apparently impossible, the surgeon should be perfectly honest and say, "This patient has in reality no chance of cure by operation and I will not attempt extirpation"; instead of soothing his conscience by saying he gave the patient her only chance, by performing an incomplete operation. "Radical operation" has its place, but it should not be discredited by misapplication.

Cancer after Supravaginal Hysterectomy.

Tyler²⁵ reports a case of carcinomatous cauliflower growth in the cervical stump six years after subtotal hysterectomy for pelvic inflammatory disease. The ovaries also had been removed. Vaginal removal of the cervix did not prevent recurrence, and the patient died in less than a year from the time that the cancer was discovered.

Tyler has reviewed the literature carefully and finds such post-operative cancer more frequent than is generally thought,—somewhat over two hundred cases of malignant degeneration of the cervical stump. In some of these, the cancer was undoubtedly overlooked at the primary operation, but even then the number is large enough to deserve consideration.

Replies to a widely distributed questionnaire indicate that the complete hysterectomy is growing in favor in cases of myoma uteri, although excision or cauterization of the cervical mucous membrane is widely employed. The greater morbidity and mortality of the complete operation still deter many operators. One point which should be considered in determining the choice of operation is the relative frequency, overlooked by Tyler as by many others. For example, if it should be found that complete hysterectomy gives two per cent. greater mortality, and cancer occurs following operation

in only one-fourth of one per cent. of supravaginal hysterectomies for myoma, supravaginal hysterectomy would be the operation of choice. But this question of relative frequency has not yet been fully investigated.

REFERENCES.

- ¹ Wile and Sisson: *Surg., Gyn. and Obst.*, 1915, Vol. xxi, p. 643.
- ² Boddy: *Jour. Am. Med. Assn.*, 1915, Vol. lxi, p. 1541.
- ³ Strunkard: *Surg., Gyn. and Obst.*, 1916, Vol. xxii, p. 93.
- ⁴ Branninger: *Am. Jour. Obst.*, Vol. lxxvi, p. 728.
- ⁵ Noel: *Surg., Gyn. and Obst.*, Vol. xxii, p. 253.
- ⁶ Elsdor: *Zent. f. Gyn.*, 1916, p. 166.
- ⁷ Munst: *Ann. d. Gyn. et Obst.*, 1915, Vol. xli, p. 545.
- ⁸ Vinberg: *Surg., Gyn. and Obst.*, 1915, No. 6, p. 741.
- ⁹ Wertheim: *Zent. f. Gyn.*, 1916, p. 1.
- ¹⁰ Grivin: *Am. Jour. Obst.*, 1915, Vol. lxxii, p. 632.
- ¹¹ Taylor and White: *Surg., Gyn. and Obst.*, 1916, Vol. xxiii, p. 217.
- ¹² Kovak: *Surg., Gyn. and Obst.*, Vol. xxi, p. 336.
- ¹³ Sames: *Ames. Jour. Obst.*, 1916, Vol. lxxiii, p. 93.
- ¹⁴ Gustens: *Trans. Am. Assn. Obst. and Gyn.*, 1915.
- ¹⁵ Emmley: *Internat. Abst. Surg.*, March, 1916.
- ¹⁶ Warner: *N. Y. Med. Jour.*, 1915, Vol. ci, p. 1213.
- ¹⁷ Pfahler: *Amer. Jour. Obst.*, 1915, Vol. lxxii, p. 79.
- ¹⁸ Kennedy: *Jour. Indiana State Med. Assn.*, 1915, Vol. viii, p. 217.
- ¹⁹ Baish: *Munch. Med. Wch.*, 1915, Vol. lxi, p. 1670.
- ²⁰ Kelly and Buttram: *Jour. Am. Med. Assn.*, 1916, p. 298.
- ²¹ Ascheim and Meidner: *Zeitsch. f. Geb. u. Gyn.*, 1915, Vol. lxxvii, p. 82.
- ²² Clark: *Surg., Gyn. and Obst.*, Vol. xxii, p. 429.
- ²³ Clark: *Surg., Gyn. and Obst.*, Vol. xx, p. 558.
- ²⁴ Hutchins: *Boston Medical and Surgical Journal*, 1915, Vol. clxxiii, p. 97.
- ²⁵ Tyler: *South. Med. Jour.*, 1915, Vol. viii, p. 583.

Reports of Societies.

NEW ENGLAND PEDIATRIC SOCIETY.

The forty-fifth meeting was held at the Boston Medical Library, December 29, 1916, the President, DR. A. C. EASTMAN, of Springfield, in the chair.

The following papers were read:

1. Case report, WYMAN WHITTEMORE, M.D., Boston.
2. Some Observations With Sour Milk Feeding, C. K. JOHNSON, M.D., Burlington, Vermont.
3. Should all Milk be Pasteurized? R. S. EUSTIS, M.D., Boston.

The following officers were elected for the ensuing year:

President, Dr. Maynard Ladd of Boston; Vice-president, Dr. Charles K. Johnson of Burlington, Vermont; secretary and treasurer, Dr. Richard M. Smith of Boston; member of Council for three years, Dr. William W. Howell of Boston.

STRANGULATED INGUINAL HERNIA WITH A GANGRENOUS APPENDIX.

By WYMAN WHITTEMORE, M.D., Boston.

ABOUT a month ago I was called out of town in the evening, to see a baby who seemed, from the doctor's account, to have a strangulated hernia. Upon arriving at my destination, I found a baby, one of twins, who had weighed three and a half pounds at birth, and who now, at the age of seven weeks and one day, weighed exactly five pounds. The other twin had died at birth. The mother had nursed the surviving baby for three or four weeks, and since then he had been bottle-fed.

Two days before I was called to see him, his mother had noticed a swelling in the left scrotum, but after a family consultation decided it was nothing to worry about. The next day he vomited a small

amount in the morning, and again in the evening, but slept well during the night. The following day he seemed pretty well, but did not take his bottle as eagerly as usual. He slept off and on during the day, and in the afternoon, as his bowels had not moved for forty-eight hours, was given an enema. This was returned with one small sky-ball. Towards evening, while being bathed, he vomited violently, quite suddenly. This sufficiently alarmed his mother to induce her to call in medical assistance.

When I saw the baby, at nine o'clock that night, he seemed to be very comfortable and was sleeping. His abdomen was considerably distended and tympanitic all over. The left side of the scrotum was swollen, tense, and shiny, and about the size of an ordinary hen's egg. It looked very much like a hydrocele. It did not seem to be tender, but the inguinal region was indurated and slightly tender. The diagnosis of a strangulated inguinal hernia seemed to be obvious, and the parents agreed to an immediate operation.

On opening the sac, a little turbid fluid escaped. The sac contained a small piece of the caecum, and, to my great surprise, a black, swollen, rigid appendix with fibrin on the outside. The appendix was removed and the caecum reduced into the abdomen, after enlarging the opening, and the wound sewed up without any drainage.

The baby came out of ether without vomiting. His bowels moved twice during the night with enemata. He made a very quick and easy recovery, and, I am glad to be able to say, is now well.

I report this case to you on account of the unusual combination of a baby seven weeks old, and weighing only five pounds, having a strangulated hernia with a gangrenous appendix.

DISCUSSION.

DR. STONE: The case which Dr. Whittemore has reported is most interesting. It presents rather characteristic symptoms similar to those present in some cases that we have seen at the Children's Hospital. It is not uncommon to find the appendix present in a hernial sac in an infant. We have seen some cases in which there has been acute appendicitis in the hernial sac. In making a diagnosis one other condition is to be considered, namely, an infected hydrocele cord. In both of these conditions the symptoms of intestinal obstruction are lacking, but the toxic symptoms may be rather marked, especially so in the case of gangrenous appendicitis. Of course it is unnecessary to warn against the extreme danger of taxis in these cases.

SOME OBSERVATIONS WITH SOUR MILK FEEDING.

By C. K. JOHNSON, M.D., BURLINGTON, VT.

In presenting this paper I may be touching on points familiar to many of you, but my results with a few infants fed on sour milk prompted me to report them. My first personal observation of sour milk feeding was accidental. An infant that had been tried on several formulae with very poor success had been given sour milk, and the weight increased from the first, at five and one half months weighing seventeen pounds; it was firm, strong and in excellent condition.

My formula has been as follows: One quart of milk was allowed to sour until well curdled; naturally, if conditions were favorable, otherwise lactic acid cultures were added; it was then churned

twenty minutes, one ounce granulated sugar was added, or in older infants part of the carbohydrate was added in the form of wheat flour. The mixture was then brought to a boil.

I first tried this feeding cautiously and soon discovered that certain infants did remarkably well on it, especially in an improvement in the stools.

Recent literature gives scant mention of sour milk, while its mention in earlier writings was not uncommon. Dr. Kerley reports two series of infants fed on a sour milk formula, but does not give the formula used. One of his series was feeding cases that were not thriving. All but one lost weight. A second group of nineteen infants all had intestinal disease. Only four gained in weight.

The following case histories are taken as representative of my series.

CASE 1. Male, 6 months old, sent to hospital from a distant town, July 15, 1916. No history obtainable. This infant was marasmic, stools undigested and frequent, weight 8 pounds. Milk and barley water was prescribed and there was slow improvement, but the stools were variable. On August 18th, the weight was nine pounds. At this time the food was changed to sour milk, there was improvement in the stools and general condition from the first. This infant was sent home September 29th, the weight then being eleven pounds and its condition good.

CASE 2. Beatrice F., aged 4 months, admitted to hospital September 10, 1916. Weight six pounds. She was pale and much emaciated, stools alkaline, cheesy with foul odor, temperature 101°F. This infant had been much over-fed on a plain milk-and-water mixture, nearly one quart of milk being given each 24 hours. Castor oil was given and sour milk prescribed. Two ounces milk and 2 ounces water, every three hours. The food was well taken, the stools soon improved and she was discharged September 29th, much improved, the weight being eight pounds. A change to milk and barley water was made before she left the hospital. This infant was seen some two months later and was doing well.

CASE 3. Male, 10 months, seen in a distant town, September 22, 1916. This infant had been taking whole milk and oat gruel; diarrhea had developed one month previous and various attempts to get back to a milk formula had failed. At this time condensed milk and barley water was being given. The stools were loose and sour, temperature normal. The infant was pale and flabby, and had lost three pounds. Sour milk three ounces, and water two ounces were ordered every three hours, six feedings. The first two or three feedings were resisted, then the food was readily taken. The stools soon became fewer, firmer, and well digested. A short time after this I had this boy under closer supervision and the stools continued good, the infant contented, but the weight remained nearly stationary. After three weeks a change was made easily to a whole milk, barley and dextrin-maltose mixture and the weight increased.

CASE 4. Male, 2½ months of age, weight ten pounds, developed enteritis in July, 1916. The bowel condition being persistent, the infant was sent to the hospital under my service, July 28. The stools frequent, loose and of a foul odor. The buttocks

were much excoriated and the infant was covered with boils, pus oozing out in numerous places on slight pressure. Culture showed nearly pure culture of staphylococcus. An autogenous vaccine was used and the skin cleared remarkably. This infant was given barley water and later a whole milk mixture. The stools improved, but attempts to strengthen the formula caused a return of undigested stools. August 17th, a change was made to sour milk. From this time there was a steady gain in weight, at six months weighing 17 pounds. The infant is contented, firm and nearly sits alone.

CASE 5. Male, birth weight $9\frac{1}{2}$ pounds. First seen at three months of age, August, 1916. This infant had been artificially fed from birth, various foods having been tried. Weight when seen was ten pounds. The food consisted of one quart milk and one quart water in each twenty-four hours. The stools were alkaline, loose and of foul odor. The general nutrition was very poor. Sour milk was prescribed and well taken, the abdominal distention decreased and the stools showed good digestion. The stools continued good and the infant contented, but the weight increased but slowly, so at the end of three weeks a change was easily made to a citrated whole milk dilution. There has been a continued improvement from this time.

I tried sour milk, 50%, in water with six healthy new-born infants and found that the stools became yellow and pasty somewhat more quickly than is usual when ordinary milk mixtures are given. More calories were taken than I usually prescribe at this age. The infants were contented, but at the end of a four-week period all showed a stationary or slight loss in weight. It may be that I overfed these infants.

I have used sour milk with a considerable number of infants over short periods with marked improvement in the stools, then changing to a simple milk formula.

As a rule the food was well taken, even eagerly, and the infants were contented.

From my few cases I will not attempt to add any conclusions, neither would I advocate sour milk for well infants. I do, however, feel that I get very satisfactory results with some infants with persistent undigested stools or diarrhea, using it usually over short periods, after which a change to a simple formula is more easily done.

A few infants continue to thrive on this feeding and develop normally.

DISCUSSION.

DR. TALEOT: My experience has been with lactic acid milk, or buttermilk, is not indicated in all instances and that all children do not do well on it. On the other hand, many children do very well and their troubles are straightened out quickly by it.

DR. PERCY: I was much interested in what Dr. Johnson had to say about "sour milk" feeding. Dr. Johnson has spoken of cases which had a certain amount of fat intolerance. This applies to a good many infants who do not gain weight and who do well on other kinds of food. If you go back carefully in the history of these cases, there is most always a history of previous diarrheal conditions. In our opinion these are probably sugar intolerance with a secondary fat intolerance. There have been a good many cases at the Children's Hospital with

the straight diagnosis of fat intolerance who have done well on lactic acid milk feeding.

In the success of "sour milk" feeding comes the question whether the efficacy of this feeding is not due to a diminution in sugar. I noted that Dr. Johnson added extra sugar and that the sugar added was in the form of cane sugar rather than in the form of lactose.

I wish Dr. Johnson had been able to report to us other cases in children, which to my mind fall into this class of cases, i. e., diarrheas needing lactic acid milk due to sugar or to the starch. These apparently do well only on a low sugar, and exceedingly well on precipitated lactic acid and high protein type of food.

DR. MORSE: I object most strongly to the term "sour milk feeding." I do not think we ought to use the term so loosely. Sour milk feeding may mean almost anything. It may mean feeding a baby with straight sour milk or sour milk which has been boiled, or sour milk or sour skimmed milk, or a modified milk which has been soured in some way.

This method of feeding which Dr. Johnson has just told us about was described over and over again in the literature of ten and fifteen years ago, and the results given in detail.

It seems to me that we must distinguish very carefully between milk which has been soured with lactic acid organisms, and given raw, and milk which has been heated before it has been given. If the milk is boiled the casein is not coagulated by rennin anyway. When the sour milk has been boiled, therefore, it is impossible to know whether the good results are due to the lactic acid organisms or to the boiling of the mixture. I do think that we ought to be very careful in our use of the term "sour milk feeding."

DR. DUNN: I quite agree with Dr. Johnson that there are a great many infants who do better when fed on a milk which contains lactic acid produced by the lactic acid fermentation. We have been very much interested in this matter at the Infants' Hospital, and have been trying to obtain evidence as to the reason for the good results observed with lactic acid milk, and also evidence as to the clinical type of case in which sour milk is indicated, or contraindicated.

The points in which sour milk or lactic acid milk differs from ordinary milk are, first, that it contains lactic acid or the bacteria which produce lactic acid; and second, that the casein is precipitated in a very finely divided form. These seem to be the essential differences. Of course, when, as is often done, the lactic acid milk is prepared from fat-free milk, or from skimmed milk, the fat content is necessarily low. Also, unless extra carbohydrate is added, as was done in Dr. Johnson's case, the carbohydrate content is low because a certain amount of sugar is used up in the process of fermentation.

Various reasons have been brought forward as to the advantage of lactic acid milk. One explanation is that the low fat and sugar content, together with the high casein content, the casein being in a form which makes it very easily digestible, are especially suited to the digestive idiosyncrasies seen in a certain class of cases. Another explanation is, that the presence of lactic acid bacilli and the freshly formed lactic acid exercises an inhibitory action upon certain harmful forms of bacterial fermentation in the intestine.

In order to throw light on these questions, the babies at the Infants' Hospital who were doing well on lactic acid milk, were then given a food which was made as nearly as possible of the same composition, in so far as the actual amount of fat, carbohydrate, and protein was concerned. The casein, however, instead of being precipitated by lactic acid, was previously precipitated by rennin, ground up fine, and then added to the food. The idea of this procedure was to exclude the lactic acid, and thus determine whether this or the composition of the food in fat, carbohydrate, and protein was the cause of the favorable result. We found that some cases did equally well on a food of similar composition without the lactic acid, but that others did not do so well. We concluded that in some cases the favorable results of feeding with lactic acid milk are due to the comparatively low fat and carbohydrate content of the food, and to the fact that the casein is in a particularly digestible form, but that in other cases the good results are due to some specific action of the lactic acid bacillus or its products.

In so far as clinical indications are concerned, we have found that the cases which do best on lactic acid milk are acute diarrheas, and chronic cases in which there is a marked intolerance of fat, of carbohydrate, or of both. The clinical type of case which is sometimes made worse by lactic acid milk, is that in which vomiting is the principal symptom.

SHOULD ALL MILK BE PASTEURIZED?

By RICHARD S. EUSTIS, M.D., BOSTON.

(Abstract.)

New York City already requires the pasteurization of all milk below certified grade, and other cities are tending in that direction. There is a fair chance that the advocates of pasteurization may persuade the health authorities to forbid the sale of any raw milk. So far no convincing arguments have been brought forward against the feeding of babies on pasteurized milk. We have nothing but the opinions of the leading pediatricians of the country that babies fed on raw milk do better than those fed on heated milk. Even if scurvy is more prevalent on a diet of pasteurized milk it is easily prevented or cured. On the other side there are in raw milk the very real dangers of tuberculosis and the other milk-borne diseases. Even with the greatest care these diseases cannot be absolutely excluded. Certainly, therefore, all milk below the grade of certified should be pasteurized, but if pasteurization is required, it should be done under official supervision.

Conclusions: Compulsory pasteurization under the control of the health authorities seems advisable. Provision should be made, however, for the sake of those who desire a clean, safe, raw, milk, for the sale of unheated milk, conforming to the essential features of certified milk. The production of such milk should be under the closest supervision by a medical milk commission or by the health departments.

DISCUSSION.

DR. TALBOT: I am very glad that Dr. Eustis has brought this subject before your attention again. There is no question but that pasteurized milk is safer for a baby than raw milk, although all rea-

sonable precautions have been taken with raw certified milk.

Raw certified milk is as safe as any milk that we can get that is not pasteurized. I think it is better for a baby to be on pasteurized milk and not get tuberculosis, than to be on certified milk and get tuberculosis.

Book Review.

The Proceedings of the Charaka Club. Vol. IV.
New York: William Wood & Company. 1916.

Previous volumes of the proceedings of the Charaka Club have always been reviewed with interest in the JOURNAL. This fourth volume, in addition to the articles printed, contains a record of papers read and subjects discussed at the meetings of the Club since the publication of Volume III. This list of thirty-seven titles affords a further and illuminating glimpse into the background of the life of this interesting organization beyond what is represented in its published transactions.

Of the dozen papers which make up the present volume, two by Dr. Gerster deal with Professor Harnack's medical data from the oldest church history and with the biography of Antonio Searpa, whom the Basle nomenclature has so rudely dispossessed from remembrance by medical students for his fascia and his triangle. There are two articles also by Dr. Walton, one on the medical saints, Cosmo and Damian, with beautiful reproductions of mosaics, coins and paintings, representing incidents in their lives; and the other on Bacon and Shakespere from the botanical point of view. The latter is delightful for the originality of its point of view, though even with its modestly undogmatic conclusions about the Baconian origin of the Shakespearian drama, we cannot agree. Dr. Joseph Collins contributes two scholarly papers on "Literary Leanings of Eighteenth Century Physicians" and on "Medicine in England in Chaucer's Time;" and Dr. Charles L. Dana writes on "The Development of Anatomical Illustrations of the Nervous System," with twenty beautiful plate reproductions from the fifteenth and sixteenth centuries, and on the costume of the ancient Greek physician, with a reproduction of a figure wearing the chiton and chlamys. Dr. Streeter pleasantly describes his rare fourteenth century English manuscript of Guy de Chauliac; and there is a sketch of the University of Alexandria by the late Dr. Mumford, in the fascinating literary style whose loss will be as much felt in future volumes of the Club as that of his charming and cultured personality must be at its meetings.

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RATIONAL ECONOMY OF DIET.

WHILE a great deal of investigation and experimentation has been carried on along the line of dietetics in general, and dietetic economy especially, in relation to minimum body needs and to nutrition, a great deal more must yet be known about food and metabolism before any very definite, hard and fast rules can be laid down in respect to diet. Caloric feeding and balancing of the ration are, unfortunately, still rather vague terms, and the extravagant but indiscriminate use of these terms, especially in the interest of food economy, is hardly justified. The movement for food economy is rightly gaining much ground because of the present crisis; and for this reason more than ever is it necessary that as clear an understanding of the food needs be had as is possible, under the present knowledge of the subject, before making any recommendations.

There is at present a great demand for "caloric feeding" and for food of high caloric value. In the prolonged febrile conditions, because of the great loss of heat, the feeding of foods having a high combustible or caloric value has proved to be of great benefit. It is in typhoid fever where caloric feeding has been extensively tried and with much success. During the febrile period, in order to maintain the heat and the vitality, almost every food consideration had to be sacrificed in favor of foods of high caloric value. And fortunately, too, high caloric food is almost entirely digested and leaves little residue to irritate or injure the intestinal tract at a time where that would be disastrous. Such food can be given in relatively large quantities without increasing the tendency to intestinal hemorrhage or perforation. Carbohydrates and fats are the foods of election. But with this type of disease the usefulness of caloric feeding ends.

The introduction of caloric feeding for healthy individuals, from considerations of economy, is not satisfactory chiefly because no one type of food can supply the nutritional needs of the body. Caloric feeding in disease is neither entirely rational nor wholly ideal, but merely the most expedient under the circumstances; but this expediency does not extend to health. A preponderance of high caloric food cannot be a balancing of the ration. The healthy body needs other food besides the heat-giving kind. This sort of food has, moreover, a disadvantage in being entirely consumed—namely, there is left so little solid residue that the intestinal canal cannot act properly. Any advantages are immediately offset by constipation thus induced. In typhoid fever, for example, this is an advantage.

Moreover, a preponderance of high caloric non-protein food cannot supply the place of the protein need of the body indefinitely. High caloric food is of great value to those whose occupations require a great deal of body heat, provided there accompanies it a sufficient amount of non-caloric protein food to balance the ration. It seems, also, that food high in heat-giving qualities is low in vitamine. The disregard of vitamine in favor of calories may cause nutritional disturbances of great severity if persisted in for long periods. Vitamines are particularly abundant in fresh milk, eggs, meat, grain, and yeast extract. All these food products are rather expensive and not usually embraced in the foods recommended in economy

movements. Indeed, it seems that the higher the vitamine content of a food the higher its cost. But the body economy—metabolism—does not tolerate a food economy that ignores the vitamine or does not allow a balancing of the food ration. Economy in food must be rather in quantity, in simplicity of menu, but yet not at the sacrifice of food variety. One type of food, whether high or low calory, is extremely undesirable. A proper diet must take account of all the food elements needed for the nutrition of the organism.

PHYSIQUE AND THE MILITARY AGE.

WHAT is a seeming incongruity in the selection of first line recruits from among the younger generation rather than from among those in the prime of life, physically as well as mentally, is resolved on a closer consideration of the physical qualities of the two classes. While it does seem that the younger individual is poorer in general muscular development and in physical endurance when in the ages between 19 and 23 than is the individual of middle life, it is nevertheless a fact that, although there is relative lessening of muscular development and apparently a commensurate lessening of the endurance, the younger individual with this lessened muscular power has a great deal of reserve power—the principal factor in physical endurance—and a great deal more than the older individual. In respect to the general musculature, there is the same proportion between the power necessary to drive the human machine and the actual power that can be generated as a maximum as there is in the heart. The actual power needed is very much the smaller part of the maximum. In older persons there may be a greater degree of actual absolute power, but nearly all of it is necessary to drive the human machine or the human heart during ordinary physical needs. When called upon for a great effort or for a great deal of endurance, as in military operation, it is usually deficient rather in proportion to the age of the individual than to his actual physical development. The untrained young have a great deal more reserve power than the untrained older individual of greater muscular power and muscular development. The young athlete, trained for competitive effort rather than for general athletic ability, is very much in the same position with his greater muscular power and muscular de-

velopment as is the older individual with similar development. The athlete may have developed a great deal of actual muscular power, but all of it is usually necessary to drive his greater and heavier machinery. His hypertrophied heart is necessary, not only for his athletic activities, but as well for his ordinary life needs. He is usually a bad risk. His mortality is higher from such diseases as pneumonia, where an extraordinary tax is put on the heart reserve. It is not the quantum of actual strength that counts, but the quantum of reserve power. The advantage of universal military training, at least as a factor in general physical development, over the competitive athletic activities of the colleges and the universities, is that, while in the latter only a few are trained at all, and these few to the point of heart hypertrophy, high blood pressure and arterial fibrosis, in the former every individual is developed and trained within normal limits rather than to unusual limits, and often to the pathological degrees.

Moreover, the power for regeneration and rejuvenation is higher among the younger than among the older. The young recuperate very rapidly, even from severe conditions. They eliminate fatigue products very quickly. The ability of the young for regeneration and rejuvenation is an important factor in the healing of wounds, and repair of bones. Because the older person represents a more highly differentiated cell-organism, he is less able to adapt himself physically to the rapidly changing environment, and is in so much less useful as a soldier.

HARVARD BASE HOSPITAL UNIT

ON May 1 it was announced from Washington that in response to the urgent request of the European Allies, whose commissioners are now visiting America, the United States will immediately mobilize and send to Europe for service, presumably somewhere in France, six of its base hospital units which were organized in this country last year. The following are the units selected, with their chiefs of staff:

Base Hospital No. 2, organized at the Presbyterian Hospital, New York, Dr. E. G. Brewer, director; No. 4, Lakeside Hospital, Cleveland, Dr. George W. Crile; No. 5, Medical School of Harvard, Dr. Harvey Cushing; No. 10, Pennsylvania Hospital, Philadelphia, Dr. Richard Harte; No. 12, Northwestern University, Evanston, Ill., Dr. Frederick Besley; No. 21, Washing-

ton University Hospital, St. Louis, Dr. Frederick T. Murphy.

The complete personnel of the Boston unit selected (No. 5) and of the other two units from this city is as follows:

PETER BENT BRIGHAM HOSPITAL AND
HARVARD MEDICAL SCHOOL.

Base Hospital Unit (No. 5).

Director—Dr. Harvey Cushing.

Assistant directors—Dr. Richard P. Strong, Dr. Roger I. Lee and Dr. Harvey Cushing.

Adjutant—Dr. William S. McCann.

Quartermaster—Capt. Augustus G. Reynolds.

Surgeons—Dr. George S. Derby, Dr. Robert B. Osgood, Dr. Edward B. Towne, Dr. Walter M. Boothby, Dr. Frank R. Ober, Dr. Gilbert Horrax, Dr. Samuel C. Harvey, Dr. Harris H. Vail, Dr. Thomas R. Goethals, Dr. William H. Potter (dental surgeon), Dr. Roger B. Taft (assistant dental surgeon).

Physicians—Dr. Walter B. Cannon, Dr. Reginald Fitz, Dr. Oswald H. Robertson, Dr. George P. Denny, Dr. George H. Minot and Dr. Harry Lyman.

Roentgenologist—Dr. Percy Brown.

Bacteriologist—Dr. James L. Stoddard.

Superintendent of nurses—Carrie M. Hall.

MASSACHUSETTS GENERAL HOSPITAL.

Base Hospital Unit (No. 6).

Director—Dr. Frederic A. Washburn.

Adjutant—Dr. Ryam Hollings.

Assistant directors—Surgical section, Dr. Lincoln Davis; medical section, Dr. Richard C. Cabot; laboratory section, Dr. J. Homer Wright.

Surgeons—Dr. Zabdiel B. Adams, Dr. Beth Vincent, Dr. William J. Mixer, Dr. Ralph A. Hatch, Dr. Elliott C. Cutler, Dr. Arthur W. Allen, Dr. George A. Leland, Jr., Dr. Leroy M. S. Miner (dentist), Dr. Harold G. Tobey and Dr. Charles W. Ringer (dentist).

Physicians—Dr. Arthur W. Sellards, Dr. George Clymer, Dr. Paul D. White, Dr. James H. Means and Dr. Wade S. Wright.

Bacteriologist—Dr. Roger Kinnicutt.

Roentgenologist—Dr. George W. Holmes.

BOSTON CITY HOSPITAL.

Base Hospital Unit (No. 7).

Director—Dr. John J. Dowling.

Chief of surgical staff—Dr. Edward H. Nichols.

Chief of medical service—Dr. J. J. Thomas.

Staff physicians—Dr. William H. Robey, Jr., Dr. Francis W. Palfrey, Dr. Cadis Phipps, Dr. W. Richard Ohler, Dr. Albert A. Hornor.

Staff surgeons—Dr. John Baptist Blake, Dr. Walter C. Howe, Dr. Halsey B. Loder, Dr. Somers Fraser, Dr. Irving J. Walker, Dr. Robert C. Cochrane.

Ophthalmologist—Dr. Allen Greenwood.

Otologist and laryngologist—Dr. Calvin B. Faunce.

X-ray—Dr. Ariel W. George.

Pathologist (chief of laboratory service)—Dr. Edgar M. Medlar.

Chaplain—Rev. Frederick M. Elliot.

Bacteriologist—Dr. Leroy U. Gardner.

Adjutant—Dr. Edmund W. Wilson.

Registrar—Dr. Edwin H. Place.

Quartermasters—Dr. Martin J. English and Dr. William F. Doland.

Dentists—Dr. Ferdinand Brigham and Dr. Frank H. Cushman.

The Harvard Base Hospital Unit was rapidly mobilized in Boston during the early days of May, and left this city on May 7 for New York, whence they sailed later for Europe. The final personnel and military titles of the unit are as follows:

Majors—Robert U. Patterson, Medical Corps, U. S. Army, Commanding Officer; Harvey Cushing, Director; Richard P. Strong (absent in Europe) Chief Laboratory Section; Roger I. Lee, Chief Medical Section; Robert B. Osgood, Chief Surgical Section.

Captains—Daniel F. Harmon, Medical Corps, U. S. Army Adjutant; Walter B. Cannon; Reginald Fitz; George S. Derby; Walter A. Boothby; Edward B. Towne; Charles Rund, Jr., Quartermaster, O. R. C., U. S. Army; Percy Browne, Horace Binney, Elliott Cutler, Henry Lyman.

Lieutenants—George P. Denny, Gilbert Horrax, Frank R. Ober, John J. Morton, Oswald H. Robertson, Thomas R. Goethals, Samuel C. Harvey, James L. Stoddard, Henry Forbes, A. V. Bock.

Dental Surgeons (Lieutenants)—William Potter, Harrison L. Parker.

There will be sixty-five nurses in the unit, of whom Miss Carrie M. Hall is head, and 147 men in the enlisted personnel, including orderlies, cooks, clerks, carpenters and electricians, besides ten sergeants from the United States Army.

POSTPONEMENT OF INDUSTRIAL HEALTH INSURANCE.

IN a report recently filed in the Senate of the Massachusetts General Court, the Committee on Social Welfare recommended further study and investigation of the entire problem of industrial health insurance as advocated by Governor McCall in his latest inaugural address, and as embodied partly in the Young Bill now pending before the Legislature. With the report the Committee submitted a resolve providing for postponement of this legislation until after further consideration. The following quotations from the report indicate the attitude and advice of the committee on this important subject.

"We must know to what extent private systems have reduced the amount of time lost by wage-earners.

"What proportion of the wage-earners are at this time benefiting from existing insurance systems.

"Whether they are showing a greater efficiency now than before these symptoms were established.

"Whether there is agreement between employers

and employees as to the workableness of health insurance in this country.

"What the cost will be to the employer, employees and the Commonwealth for the maintenance of a comprehensive system of health insurance.

"What grounds the proponents of health insurance have for the claim that the movement has been successful in European countries.

"In view of the fact that Norway, Roumania, Russia, Serbia, Great Britain, the Netherlands, Germany, Austria, Luxemburg and Hungary have all adopted compulsory health insurance and that several State Legislatures have authorized a thorough study of the entire subject of social insurance, the opponents of such insurance must produce stronger evidence than any yet offered, to show why Massachusetts may not in the near future seriously consider some form of health insurance, together with maternity benefits and unemployment insurance.

"Much has been said at the hearings which may well lead us to give careful consideration to the words of Governor McCall in his inaugural message.

"If protection against the overtaking of those engaged in industry can best be secured by the adoption of some system of health insurance, then that is what all of us, as good citizens, should work for.

"If, on the other hand, it is impossible to substantiate claims of those who testified to the success of health insurance in State and country-wide movements, then the Commonwealth may well hesitate to embark on the venture."

Presumably, this attitude of the Committee, combined with the opposition which has developed from various quarters to the progress of industrial health insurance, will mean, at least, postponement of all legislative action on this important question for the present, especially in view of the disturbance and engrossment of public interest by the entrance of the United States into the war. After the war, or perhaps next year, it may be expected that the entire subject will again be raised. Meanwhile, so far as the exigencies of the time permit, thoughtful investigation of industrial health insurance and its many problems should be conducted by physicians and medical societies, individually and collectively.

THE GODDARD HOSPITAL.—The Goddard Hospital of Brockton, established in 1902, has recently issued a report of its work up to the present time. Organized to care for only maternity and surgical cases, it reports that it has admitted during the past year 312 surgical cases and 158 obstetrical cases. The total mortality for the year was 0.8%. Since 1906 there have been but eight maternal deaths, giving a total mortality of 0.5. There have been 29 Cesarean operations performed, with two maternal deaths and no fetal deaths.

MEDICAL NOTES.

ELECTRIC DELINEATION OF VISCERA.—In the issue of the *JOURNAL* for November 23, 1916 (Vol. clxxv, p. 766) we commented editorially on a method then recently devised by Dr. James Shearer at a casualty clearing station in France, for the electric delineation of the internal organs of the body. At that time we said, with reference to this method, "If experience bears out early expectations, this discovery should open a new field of diagnosis, which may prove applicable in many diverse conditions, not only surgical, but medical." In the issue of the *British Medical Journal* for March 24, 1917, is an item stating that "this expectation has not been fulfilled, and we have reason to believe that the inventor has failed to satisfy the physicists consulted as to the truth of his claims."

TUBERCULOSIS SOCIETY MEETING.—The thirteenth annual meeting of the National Association for the Study and Prevention of Tuberculosis is being held in Cincinnati, Ohio, May 9 to 11. The general meeting with address of the president, Edward R. Baldwin, M.D., opened at 4.30 p.m., on Wednesday, May 9. On Thursday and Friday mornings the meetings of the clinical, sociological and pathological sections were held. Many interesting papers were read. In this conjunction attention may be directed to the thirteenth annual report of the Boston Association for the Relief and Control of Tuberculosis, which, in addition to the record of the activities of the Association for the year ended October 31, 1916, contains the addresses by Dr. Edward R. Baldwin, Dr. Homer Folks and Dr. Lee K. Fraenkel at the thirteenth annual meeting of the Boston Association on November 10, 1916.

A RARE ANATOMIC ANOMALY.—In the issue of the *British Medical Journal* for March 17, 1917, is described a rare anatomic anomaly recently observed by Professor Edward Fawcett in the dissecting room of the University of Bristol Medical School. This anomaly consisted in a double radial artery, associated with high bifurcation of the brachial which, in Dr. Fawcett's experience, is frequently associated also with an increased number of heads of origin in the biceps muscle. In this instance there were three heads.

"The vas aberrans left the brachial artery at the lower border of the tendon of the teres major muscle, ran downwards superficial to the median nerve, and at about the middle of the upper arm crossed the superficial surface of the biceps to reach its outer side at the end of the elbow. Below this point it bifurcated into two branches of equal calibre, one, more medial, which ran the course usually associated with the radial artery, the other, more lateral, which, running by the side of the radial vein superficial and lateral to the brachio-radialis muscle at the

junction of the middle and lower thirds of the forearm, was joined company by the radial nerve, and with it reached the back of the wrist. The branch first described turned backwards under the tendons of the extensor ossis metacarpi pollicis and extensor brevis pollicis, having previously given off the anterior radial carpal and superficial volar branches; later it terminated under the extensor tendons at the back of the wrist as the posterior carpal artery, previous to which having given off the dorsal arteries of the thumb. The branch secondly described, having reached the wrist superficially, at once made for the proximal end of the first interosseous space, through which it passed to form the deep palmar arch, previous to which it gave off the dorsal artery of the index finger. From their behavior and their equality in size, one is justified in regarding each of these branches as a radial artery, hence the super-scription—double radial artery.

"The condition is naturally one of some interest to clinicians. Professor Fawcett states that he has not once met with it in a period of 30 years' dissecting-room experience, although he has been asked if such condition might exist by more than one clinician."

A NEW PUBLICATION.—We have recently received the first issue of a new publication, the *Revue de Chimiothérapie*, issued at Paris, under the editorship of Dr. J. Laumonier. The science of chemotherapy, which was in reality founded by Dujardin-Beaumetz and Bardet about twenty years ago, has hitherto been largely monopolized by German writers. The *Revue de Chimiothérapie* aims now to become its special organ and to restore the knowledge of the science to the country of its origin.

WAR NOTES.

PREPAREDNESS WORK AMONG THE ROENTGENOLOGISTS.—At the request of the Council of National Defense a Committee of Preparedness was appointed by the President of the American Roentgen Ray Society. This committee consists of the following members: Lewis Gregory Cole, George W. Holmes, Leopold Jaches, Willis F. Manges, and Harvey W. Van Allen, with an auxiliary Advisory Committee on which the following men have been asked to serve:—Frederick H. Baetjer, David R. Bowen, Eugene W. Caldwell, James T. Case, William D. Coolidge, Arthur C. Christie, H. W. Dachtler, Kenyon Dunham, Ariel W. George, Alfred L. Gray, Roland Hammond, Preston M. Hickey, Walter C. Hill, P. W. Huntington, George C. Johnston, Frederick Manwaring Law, Henry K. Pancoast, George E. Pfahler, John S. Shearer, Edward H. Skinner, Albert Soiland, W. H. Stewart.

The work planned by this committee has three divisions:

1. The canvass of the country for a complete list of medical men available for military roentgenology.

2. The establishment of schools in different geographical centers where uniform instruction in military roentgenology may be obtained.

3. Preparation of a manual on military roentgenography.

A circular letter has been sent to many roentgenologists, but the Committee greatly desires to reach all men engaged in the work. This specialty is one of the most important branches of military surgery and the workers are comparatively few. Therefore we most earnestly urge that all roentgenologists who possibly can will do their "bit" and volunteer their services to the country.

In order to have this service of the greatest efficiency, it is hoped that all roentgenologists will adopt the uniform technic which will be worked out by representative roentgenologists throughout the country. This technic will be described in the manual and taught in the schools.

Men willing to volunteer will kindly communicate with the Committee of Preparedness of the American Roentgen Ray Society with headquarters at Cornell University Medical College, First Avenue and Twenty-eighth street, New York City.

BOSTON RED CROSS HOSPITAL CALLED FOR FOREIGN SERVICE.—The arrangements for the establishment of the Red Cross base hospital on the Common were suddenly interrupted by the call of the adjutant-general for its six base hospitals to go to France. It is expected that the units will leave within three weeks.

Each unit consists of 23 doctors, 2 dentists, 65 nurses and 150 enlisted men of the medical department, and is prepared to care for 500 wounded men.

BOSTON CHAPTER OF RED CROSS.—The Boston Metropolitan Chapter of American Red Cross has moved its headquarters from Newbury Street to 12 Arlington Street, Boston. Formal dedication of the new headquarters was conducted on April 23. The American flag and Red Cross banner were raised, and Governor McCall and Mayor Curley spoke. The educational department is still to be conducted at the Lyman residence, at 138 Beacon Street.

BOSTON UNIVERSITY EXTRA SESSION.—The Medical School of Boston University will continue its courses throughout the summer. This will enable the senior class to be graduated three months earlier next year, in order that they may be ready for government service if desired.

PREPAREDNESS OF THE STATE BOARD OF HEALTH.—In order that the State Department of Health and all local boards of health may be thoroughly proficient to meet all unusual demands upon them made by existing war conditions, a meeting was held of the chairmen of committees on hygiene, medicine and sanitation

in the various towns and cities in conference with Dr. Allan J. McLaughlin. At this meeting were discussed the providing of hospital facilities, supervision over milk and water supplies, precautions against measles spreading among the soldiers, nursing for the soldiers in case of casualties, and particular hygienic measures in towns containing or contiguous to camp grounds.

Of typhoid fever there is little danger, since the soldiers are immunized by inoculation, but measles is found to be a serious menace to the troops. Extra precautions are deemed necessary, even where there are no local companies, as soldiers will come from every locality and will revisit their homes, and if they are not well protected against infection at home they may carry it back to the troops.

MEDICAL SUPPLIES NEEDED.—Surgeons at the Commonwealth Pier, where between 3000 and 4000 Naval Reserves are quartered, have practically no medical supplies, excepting those furnished by the Minute Man Committee of the Sons of the American Revolution. There is immediate need for many articles, and the committee is informed that the Government cannot supply them for several weeks. Any articles sent to Chairman Arthur May Knapp at the headquarters of the committee, 216 Washington Street, will be delivered immediately. The list of things needed includes:

Carbolic acid, aspirin tablets, boric acid, aromatic spirits of ammonia, nitric acid, ether, bismuth, collodion, glycerin, tincture of iodine, Dobell's solution, bottles, vaseline, talc powder, sutures and needles, compound cathartic pills, bandages (one, two and three inch), splint wood, rubber tubing, gauze, boric acid ointment, novocain, ice bag, hot-water bottle, rubber gloves, stomach pump, coryza tablets, menthol tablets.

PHYSICIANS NEEDED IN MEDICAL CORPS.—In an address before the Massachusetts Association of Boards of Health, Colonel Chamberlain, Medical Corps, U. S. A., stated that physicians are much needed in the Medical Corps and in the Medical Reserve Corps. There are two hundred vacancies, and there will be two hundred more unless the President takes measures to retain in service those officers whose terms of service will expire shortly.

TUBERCULOSIS AMONG FRENCH SOLDIERS.—It is reported that Dr. Herman M. Biggs, State Commissioner of Health, New York, recently returned from France, has estimated that from 150,000 to 160,000 French soldiers are at present suffering from active tuberculosis. At the end of the first year of the war 86,000 French soldiers suffering from the disease were returned

to their homes. Of the deported population of France, approximately 1000 are being returned daily from Germany. Of the 20,000 returned in 1915, 5000 were tubercular. Some French authorities state that from 20 to 50% of the French prisoners of war in Germany are tubercular.

TUFTS DENTAL CLINIC FOR SOLDIERS.—The Tufts College Dental Unit, composed of eight men who have volunteered their services to all soldiers and sailors in need of dental work, have already attended to several hundred soldiers. The work is done at the Tufts Dental School and at the Boston Dispensary.

RUSSIAN RED CROSS.—At a lecture provided by Columbia University on "The Work of the Russian Red Cross in the Trenches," an address was read which had been written by Colonel Andrew Kolpashnikoff of the Twenty-first Siberian Flying Column of the Russian Army.

"At the outbreak of the war the Russian Red Cross was no more ready than the rest of Russia. There were fewer than 75 hospitals in a fighting line of 4,000,000 men. But much has been done since, and now 35,000 nurses are at work.

"The Flying Column, peculiar to the Russian Army, cares for the wounded during and after battle. When not serving it stays with its regiment in the trenches, its commander sleeping there, but it goes forth whenever heroes fall, and often passes the night in searching in the fields and woods for the wounded. Its pride is never to have a wounded man, and the percentage of men killed in the Flying Column is, therefore, great. Each commander has three doctors and about 300 men to help him in his difficult work. Distances on the Russian front are enormous, and first-aid stations are often 30 miles from a hospital. Owing to the scarcity of ambulances, springless carts often must be used to transport the wounded, but recent gifts of ambulances have been made to the Russian Red Cross by Americans."

AMERICAN FUND FOR FRENCH WOUNDED.—The New England Branch of the American Fund for French Wounded, from March 15 to April 10, shipped the following-named hospital supplies: 197,817 surgical dressings, 22,309 yards surgical gauze, 1301 pounds absorbent cotton, 980 yards adhesive plaster, 250 hot-water bottles and air cushions, 217 yards rubber sheeting, 229 hypodermic syringes and needles, 960 blankets and sheets, 5182 pillows (fracture, bed and comfort), 1267 pillow slips, 6060 pairs socks, 1845 additional knitted articles, 5484 flannel garments, 10,622 towels, handkerchiefs, washcloths, 1115 pairs slippers, 332 comfort bags (filled), 2104 yards flannel, 1104 pounds condensed milk, 4116 miscellaneous articles.

NEW HAMPSHIRE BASE HOSPITAL.—Bishop Guertin of the Catholic Diocese of New Hampshire has offered to the government the use of the recently vacated Old Ladies' Home in Manchester, N. H., for use as a base hospital. The War Department has asked that the offer be kept open for one month. It is understood that the services of the Sacred Heart Hospital staff and Sisters of Mercy go with the offer of the building.

COÖPERATION OF MASSACHUSETTS BOARDS OF HEALTH.—On April 26, the Massachusetts Association of Boards of Health will hold its quarterly meeting and will discuss the relation of the State and local boards of health to general preparedness. The discussion will be opened by Dr. Allan J. McLaughlin, and those taking part will be Dr. Harold C. Ernst, professor of bacteriology of the Harvard Medical School; Dr. Thomas F. Harrington, of the State Board of Labor and Industries; and Colonel W. P. Chamberlain, U. S. A.

CARE OF MENTAL DISEASE IN THE ARMY.—A committee has been chosen to devise ways and means of maintaining a hospital to care for mental disease among soldiers. This is stimulated by the recommendations of the National Committee for Mental Hygiene. The Governor, acting with this committee, sent recently the following telegram to Major-General W. C. Gorgas, surgeon-general of the United States:

"Massachusetts offers personnel and equipment for hospital unit to care for soldiers suffering from nervous and mental diseases, said unit to be attached to any base hospital located in Massachusetts. This is in accordance with plans submitted to you by the National Committee for Mental Hygiene."

Dr. L. Vernon Briggs is secretary, and other members of the committee include Dr. George M. Kline, chairman, also chairman of the Massachusetts Commission on Mental Diseases; Dr. John A. Houston, superintendent of the Northampton State Hospital, treasurer; Dr. Walter E. Fernald, superintendent of the Massachusetts School for the Feeble-Minded; Dr. E. H. Coohon, late administrator of the Psychopathic Department of the Boston State Hospital, and now superintendent of the Medfield State Hospital.

The need of such a hospital is explained in the following report of the National Committee for Mental Hygiene:

"The extensive prevalence of mental disorders in military life, as compared with civil life, is borne out by statistics drawn from various sources. Mental diseases were approximately three times as prevalent among the troops on the Mexican border last summer as among the adult civil population of the state of New York. The excess among soldiers is still higher under war conditions. In our own army the

insanity rate rose during the Spanish-American war from 8 per thousand to 20 per thousand; in the German troops during the Boxer rebellion the rate reached 50 per thousand. The statistics available regarding the incidence of mental diseases in our own troops indicate that an army of 500,000 may be counted upon to have 1500 insane patients a year in peace, and not fewer than 4500 a year in war, or even perhaps at times of rapid mobilization. In other words, the number of insane patients coming to notice from such an army under the conditions which prevailed on the Mexican border last summer is certain to exceed the entire number of men admitted annually to all public institutions for the insane in the state of California."

The Massachusetts committee, besides voting to authorize the Governor to offer to the War Department the personnel and equipment of a hospital unit, voted to establish a unit on the grounds of one of the state hospitals and to consider establishment of others. It further voted to recommend that Massachusetts send for nervous and mentally sick soldiers belonging to the state, where adequate provision for transportation cannot be obtained. The state at present will be at no expense in establishing the hospital units, as citizens have subscribed already more than \$5000.

COLUMBIA'S WAR HOSPITAL.—Mention has already been made in the JOURNAL of the proposed war hospital of five hundred beds, to be erected by Columbia University. The cost of erecting the hospital and maintaining it for one year, with a capacity of 500 beds, has been estimated at \$700,000, and the committee in charge of collecting funds will make the raising of this amount by popular subscription its immediate object. A simple announcement of the proposal to build the hospital, before any organization or appeal had been prepared, resulted in spontaneous public subscriptions totaling more than \$50,000. The Hospital will be erected on the old Columbia Oval in the Bronx. It will be used, not only for the care of soldiers and sailors, but for any emergency which may arise, such as disaster from explosions, fires and other accidents. Aside from this service, the Hospital will be the center of practical training for surgeons, nurses and others intending to do Red Cross work at the front. The present lack of facilities to train men in the peculiar demands of war service, will be met in this institution, for it is designed to organize the hospital exactly like a Red Cross base hospital unit. If, as is suggested, the Government should take over the French ambulance service, now maintained by individual Americans, this preliminary training would be of appreciable value. The finance committee consists of William H. Woodin, president of the American Car and Foundry Company, as treasurer, and Dr. William H. Bishop; Frederick A. Goetze, treasurer of Columbia Uni-

versity; Willard V. King, president of the Columbia Trust Company; Dr. Adrian V. S. Lambert, associate professor of surgery of the College of Physicians and Surgeons; Dr. Samuel W. Lambert, dean of the college; Dr. J. Bentley Squier, professor of urology in the college; and Dr. Francis Carter Wood, director of the Crock-er Research Fund.

FURTHER CALL FOR BRITISH PHYSICIANS.—The War Cabinet declared on April 20 that every physician and surgeon and every man with medical training of military age must be called up for service immediately. The official explanation is as follows:

"The enemy, in total disregard of the accepted tenets of civilized warfare, has deliberately instituted a submarine campaign against hospital ships, and it has, therefore, become essential that a large number of hospitals should be established overseas in the various theatres of war for the treatment of sick and wounded. In order to allow this to be done with great rapidity, it is essential to secure the services of every doctor that can possibly be spared from the United Kingdom."

COMMITTEE TO FINANCE RED CROSS.—At the first meeting in Washington of the committee called by the President to devise means of financing the American Red Cross, Cleveland H. Dodge of New York was elected chairman of a committee to conduct a campaign to raise funds. F. L. Higginson, Jr., of Boston was elected one of the vice-chairmen of this committee. The campaign will probably end with a special Red Cross day some time in May, to be designated by presidential proclamation.

It was pointed out at the conference that the finance committee will probably operate in two ways, nationally and through the local Red Cross chapters, of which there are now 460 throughout the country. The work of the society will be limited to the funds collected. If this amount is large enough, the work will be extended to a general relief service for the Allies along their various fronts in addition to taking care of the hospital and home relief needs in this country.

BOSTON COMMITTEE ON PUBLIC SAFETY.—To fill the position of chairman of the sub-committee on hygiene, medicine and sanitation of the Boston Committee on Public Safety, left vacant by the call of Dr. Richard P. Strong to Washington, Dean Edward H. Bradford of the Harvard Medical School has been chosen.

WAR TIME MEDICAL ARRANGEMENTS.—The general medical board of the Council of National Defense met in Washington on April 22 and discussed plans for giving the country an efficient war time medical service, not only in the military and naval establishments, but in civil life as well. Members of this board include:

Surg-Gen. Gorgas of the Army, Surg-Gen. Braisted of the Navy, Surg-Gen. Blue of the Public Health Service, Col. Jefferson R. Keene of the Red Cross, Dr. William H. Welch of Johns Hopkins, Drs. William and Charles Mayo of Rochester, Minn., Dr. Richard P. Strong of Harvard, Dr. Charles Peck of the University of New York, and Dr. F. F. Simpson, chief of the Defense Council's medical section.

Recommendations of the medical board, that medical schools of the country do not graduate their students prematurely as an emergency measure, and its suggestions for continued observance of the army's regulations requiring that medical recruits have a year's hospital experience, are strongly indorsed in the following statement given out by Dr. John M. Baldy of Philadelphia.

"The country needs medical men for the new army, but it needs medical men of proper education. We had a recent experience in the Spanish war of the disastrous results of an incompetently conducted medical service. Every care should be taken that such an experience be not repeated, that the war policy of the Council of National Defense be supported, and that the service of our home hospitals be not ruined, and that our civilian populations remaining in the shops and fields be not neglected.

"With the political pacifists relegated to their proper places of innocuous desuetude, and with selective conscription in force by drawing on the medical graduates of recent years, and without injuring our future supply, there will be no lack of competently educated medical men in the army and navy."

Dr. Baldy recommended that schools that have speeded up graduation rescind their action, pointing out that graduates, in the normal course of events, will be needed within a few months to take the places of internes drawn from hospitals to do military service.

WAR RELIEF FUNDS.—On May 12, the totals of the principal New England war relief funds reached the following amounts:

Belgian Fund	\$602,804.74
French Wounded Fund	226,180.25
Armenian Fund	182,084.09
Serbian Distress Fund	117,744.66
Permanent Blind Fund	111,294.35
French Orphanage Fund	100,985.13
Serbian Hospitals Fund	90,607.31
Surgical Dressings Fund	84,877.47
Boston Ambulance Fund	82,983.48
Italian Fund	40,198.27
Lafayette Fund	26,976.03
Louvain Fund	10,017.03
Siberian Ambulance Fund	6,839.11

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday, May 12, the

number of deaths reported was 278, against 303 last year, with a rate of 18.77, against 20.78 last year. There were 39 deaths under one year of age, against 42 last year, and 82 over 60 years of age, against 94 last year.

The number of cases of principal reportable diseases were: diphtheria, 99; scarlet fever, 38; measles, 230; whooping cough, 10; typhoid fever, 2; tuberculosis, 49.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 4; measles, 1; tuberculosis, 7.

Total deaths from these diseases were: diphtheria, 5; scarlet fever, 3; measles, 5; whooping cough, 1; tuberculosis, 23.

Included in the above were the following deaths of non-residents: diphtheria, 2; scarlet fever, 1; measles, 1; tuberculosis, 3.

PREVENTION OF INFANTILE PARALYSIS.—In an effort to prevent another epidemic of infantile paralysis in Massachusetts this summer, the State Health Department is about to start a campaign of preventive measures. A booklet on the disease has been prepared by Dr. Lyman A. Jones, and will be for the information of parents throughout the State. Cleanliness is urged as a primary consideration. Over-feeding is to be guarded against, and over-dressing of infants. The pamphlet points out that most of the cases occur between May and September, and this is, therefore, the time for strictest caution.

BOSTON FLOATING HOSPITAL.—The Boston Floating Hospital wishes to call to the attention of the public and the profession that it will not discontinue its work this summer because of war conditions. The boat is now being put in readiness, and its staff of doctors and nurses selected. An appeal for funds to carry on the summer's work is made, as usual.

INFANTILE PARALYSIS IN MAYNARD.—A mysterious case of illness which had caused some apprehension in the town of Maynard, was discovered to be infantile paralysis, and has been so reported to the local and state boards of health. The case was included in the reported number of 34 cases since January 1, which is about the normal number for this time of year.

HOSPITAL AND HEALTH CENTER FOR FRANKLIN.—Through the gift of Mr. and Mrs. Harry T. Hayward, an old colonial property in Franklin, Mass., has been purchased and presented to the Nursing Association for hospital purposes. The house is a solidly constructed building, heavily timbered and rests on strong foundations. The donors will remodel the interior for hospital uses. It is planned to include in the building nurses' quarters, an operating room for emergency cases, and minor operations, and quarters for eye, ear, nose and throat, dental

and tuberculosis clinics. The Franklin Nursing Association, organized fourteen months ago, will thus be provided with a home for its district nurses and a center for public health activities of all sorts. No long cases will be taken here, but the hospital will be a clearing house for the larger institutions, and should greatly increase the usefulness of the Association.

FUND FOR WALTHAM HOSPITAL.—An effort is being made by the Waltham Hospital to raise a fund of \$40,000 to enlarge and re-equip the Hospital to meet existing conditions. The surgical department is inadequate, and there is immediate need of a new wing to house the department and new equipment to furnish it. No money can be spared from the hospital's current income as the expenses have exceeded the receipts by more than \$3000 in each of the past two years. Checks payable to the Waltham Hospital may be sent to Miss Susan W. Beal, Hospital Building, Waltham.

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.

HAMPSHIRE DISTRICT MEDICAL SOCIETY.—The annual meeting was held at Boyden's Restaurant, Northampton, on May 10. The retiring president, Dr. C. J. Byrne of Hatfield, read a paper on "Alcohol." A nominating committee, consisting of Dr. W. P. Stutson, Dr. C. R. Gardner and Dr. J. M. Fay, retired and brought in the following list of officers for the coming year, and they were elected: president, Dr. A. G. Minshall; vice-president, Dr. H. G. Rockwell; secretary, Dr. J. D. Collins; treasurer, Dr. J. G. Hanson; librarian, Dr. F. E. Dow; commissioner of trials, Dr. W. P. Stutson; councillors, Drs. C. J. Byrne, O. W. Cobb, J. S. Hitecock, F. H. Smith; councillors for nominating committee, Dr. J. S. Hitecock; alternate, Dr. F. H. Smith; censors, C. J. Byrne, C. T. Cobb, A. J. Bonneville, J. E. Hayes. Dr. Minshall in assuming the chair made a neat speech of acceptance.

The following Fellows have been accepted for service in the Medical Reserve Corps of the Army; Drs. J. D. Collins, W. J. Collins, H. B. Perry, E. H. Hughes, Northampton, and J. F. Bowen, Amherst. Drs. E. C. Greene and E. E. Thomas have forwarded applications for the above, to Washington.

E. E. THOMAS, M.D., *Correspondent.*

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY.

ALBERT CLARENCE LANE, a member of the Middlesex East District Medical Society, was born in Chichester, N. H., and fitted himself

for the study of medicine at Pittsfield Academy, N. H. He received his medical training at Dartmouth and Long Island College Hospital, from which he was graduated in 1879, and at once entered into active practice in Billerica, Mass., giving all his thought and energy to his work. His skill and vigilance attracted attention, and his patients felt to an unusual degree they could safely confide in him.

For a short time he resided in West Medford, Mass., but in 1900 moved to Woburn, where he sustained his enviable reputation as a general practitioner.

He was one of the original members of the Charles Choate Memorial Hospital Association and served upon the Hospital Staff. He was a thirty-third degree Mason and a Past Master of Thomas Talbot Lodge, A. F. and A. M.

Dr. Lane died February 1, 1917, aged 65 years. He is survived by his wife, a son, C. Guy Lane, M.D., and one daughter.

A. E. SMALL, M.D., *Secretary.*

SOCIETY NOTICES.

AMERICAN MEDICAL EDITORS' ASSOCIATION.—The annual meeting of the American Medical Editors' Association will be held at the McAlpin Hotel, New York City, on June 4 and 5, under the presidency of Dr. G. M. Piersol, Editor of the *American Journal of Medical Sciences*.

A most interesting and instructive program is now being prepared and it is contemplated that the forthcoming session will be the largest ever held in the history of the Association.

The forty-eighth anniversary of this society will be celebrated by a banquet, on the evening of June 5, at the McAlpin Hotel.

WOMEN'S MEDICAL ASSOCIATION.—The Women's Medical Association of New York City is planning a banquet, to be held at the Hotel McAlpin on Wednesday evening, June 6, 1917, for the women physicians who will be in New York City for the meetings of the American Medical Association. Tickets, three dollars, may be obtained from Dr. Mathilda K. Wallin, 616 Madison Avenue, New York City.

RECENT DEATHS.

WILLIAM HENRY WINSLOW, M.D., an eye specialist and a Civil War veteran, died at his home in Roxbury, on April 8, of pneumonia. Dr. Winslow was born in Belfast, Me., in 1840. He was graduated from Annapolis and served for a short time in the navy. Later he studied medicine and was graduated from the University of Pennsylvania, Jefferson Medical College and Hahnemann Medical College. He practised for many years in Philadelphia, Pittsburgh and Boston, becoming a specialist in diseases of the eye. He was, for many years, editor of the *Hahnemannian Monthly* of Philadelphia, and was the author of many articles as well as of the book, "The Human Ear and Its Diseases." Besides contributing articles on sports to magazines and newspapers, he wrote a number of historical novels concerning the Civil War, including "Cruising and Blockading," and "Naval Lads and Lassies." Dr. Winslow was a member of the military order of the Loyal Legion, and of the Masons. He is survived by his widow and two sons.

WINTRED NEWELL EMERY, M. D., who died on April 5, at his home in Waltham, was born at South Chat-

ham, Mass., June 11, 1866. Dr. Emery was educated in the Boston public grammar and high schools, the Berkeley Institute and Boston University School of Medicine, graduating from the latter institution in 1891. His death after an illness of two months was due to hardening of the arteries. He is survived by his wife and three children.

WALDO HODGES STONE, M. D., died at his home in North Rehoboth at the age of 62. He was graduated from Boston University School of Medicine in 1882. He practised his profession in Providence, R. I. He is survived by his wife.

DANIEL O. KING, M. D., died recently at his home in Providence, R. I. He was graduated in 1875 from Bowdoin Medical School. Dr. King administered the Pasteur treatment to the first patient in the city of Providence.

EDWARD T. TUCKER, M. D., died on April 10 in New Bedford, where he had practised medicine for 40 years. He was a graduate of Brown University and the Harvard Medical School.

WILLIAM APPLETON BELL, M.D., a leading surgeon of Somerville, dropped dead of heart disease, in his garage, April 3, 1917. He was a son of Luther V. Bell, for twenty years superintendent of the McLean Hospital, and was born in Somerville, May 16, 1851. He received his education at Phillips Exeter Academy and Harvard College, where he was graduated in 1873. Three years later he took his M.D. from Harvard Medical School and went abroad to study medicine for a period of three years, but not until he had married Ida Mills, of Lawrence, and had joined the Massachusetts Medical Society. On his return he practised in Somerville, became visiting surgeon to the Somerville Hospital on its organization in 1891 and filling a regular service ever since. He is survived by two sons, one of them being Research Fellow in Biological Chemistry in Harvard Medical School.

MOSES J. WHITE, M.D., who died recently in Milwaukee, Wis., was born in Hartford, Conn., Feb. 28, 1860. He descended from a line of physicians. He was a student at Princeton University and Lafayette College and was graduated from the medical department of the University of New York in 1884. He was appointed assistant physician at the Manhattan Hospital for the Insane, and later accepted a similar position in the Milwaukee Hospital for the Insane. At the end of his first year in the latter hospital he was appointed superintendent, a position which he held for 28 years. He was professor on mental diseases in the Wisconsin College of Physicians and Surgeons and in Marquette University. For several years he was a lecturer in colleges. He was a member of the American Medical Association, the American Medico-Psychological Association, the New York Medico-Legal Society, the Wisconsin State Medical Society, and the Milwaukee Medical Society. He is survived by his widow and a son, Dr. Reginald James White of Hartford, Conn.

GEORGE BAKER UNDERWOOD, M.D., a Fellow of the Massachusetts Medical Society, died at his home in Gardner, February 2, aged 62 years. He was a graduate of the Dartmouth Medical School in 1882, and joined the Society, from West Gardner, in 1884.

WILLIAM W. BURNETT, M.D., of Wrentham, Mass., died on February 18 of heart disease while returning from a night call in an adjoining town. Dr. Burnett was born in New York City, Nov. 9, 1848. He graduated from the New York Homeopathic Medical College in 1870, practised medicine in that city, in Freehold, N. Y., in Washington, D. C., and in Amherst, Mass. He had been located in Wrentham for about twenty years. He was a member of the Washington Medical Society and the American Institute of Homeopathy. A widow and two children survive him.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

May 24, 1917

THERAPEUTIC AND PREVENTIVE MEDICINE		EDITORIALS	
ARTERIOSCLEROSIS, WITH SPECIAL REFERENCE TO DIET. By Louis Faugères Bishop, A.M., M.D., New York.....	721	STREAM POLLUTION.....	744
ORIGINAL ARTICLES		HEAT AND INFANT MORTALITY.....	745
A STUDY OF 29 CASES OF ECHINOCOCCUS DISEASE AT THE MASSACHUSETTS GENERAL HOSPITAL. By Lincoln Davis, M.D., Boston, and Guido M. Balboni, M.D., Boston.....	726	RECONSTRUCTION HOSPITALS.....	745
MENTAL STATES RESPONSIBLE FOR MALINGERING. By Ernest B. Emerson, M.D., Bridgewater, Mass.....	736	MEDICAL NOTES.....	746
TRAUMATIC INJURIES OF THE KIDNEYS. By Frank Warner, M.D., F.A.C.S., Columbus, Ohio.....	740	THE MASSACHUSETTS MEDICAL SOCIETY	
OBSERVATIONS ON MEASLES. By D. M. Lewis, M.D., New Haven, Conn.	742	NOTES FROM THE DISTRICT MEDICAL SOCIETIES.....	750
BOOK REVIEW		OBITUARY	
Gynecology for Students and Practitioners. By Thomas Watts Eden, M.D., and Cuthbert Lockyer, M.D.....	743	HERBERT S. GAY, M.D.....	751
		CORRESPONDENCE	
		A FURTHER EXPOSITION OF THE ABDUCTION TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR. Royal Whitman.....	751
		MISCELLANY	
		NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.....	754

Therapeutic and Preventive Medicine.

ARTERIOSCLEROSIS, WITH SPECIAL REFERENCE TO DIET.*

BY LOUIS FAUGÈRES BISHOP, A.M., M.D., NEW YORK,
*Clinical Professor of Heart and Circulatory Diseases,
Fordham University School of Medicine; Physician
to the Lincoln Hospital.*

Mr. President and Gentlemen of the Lynn Medical Fraternity:—

I AM highly appreciative of the opportunity of addressing you on a subject that I have found of the profoundest interest.

Everyone hears very often the term, "arteriosclerosis," but I doubt if many have a clear conception of what is meant when this word is used. The word itself of course means hardening of the blood vessels, but the blood vessels constitute a very important and extensive part of the human body. If you have ever seen one of those anatomical preparations in a museum that have been made by injecting the blood vessels with plaster of paris or some other insoluble material and then putting the part in solution of acid so that all the flesh was eaten away, and the only thing left was the plaster outlining in the blood vessels, you noticed that the blood vessels constituted a very large part of the anatomical structures. Indeed, when you come to consider the capillaries as part of the circulatory apparatus, they constitute, not only

a large part, but a large proportion of the structures of the body.

Though the term "arteriosclerosis," if confined to the blood vessels, would still constitute a very extensive disorder, nevertheless, in clinical medicine it is used to name a disease that is much more extensive than merely the circulatory organs. It is used as a general term to define the degenerative disease in which the blood vessels take a conspicuous part.

The usual cause of this disease is a disturbance of the functions of nutrition, defined also as a disturbance of metabolism, so working back from the name, which is given to the disease because of the conspicuous participation of the large arteries, to the early cause of this condition, we find that arteriosclerosis may be defined as a disease dependent upon a disturbance of metabolism, resulting in thickening of the blood vessels.

It is easy enough for the man who is writing a dictionary to define arteriosclerosis as a thickening of the blood vessels. It is a very different matter to define the actual disease to which we give this name.

The fact is that no one has so far given a satisfactory definition of the disease arteriosclerosis.

It certainly is not merely thickening of the blood vessels, and anyone who stops, after having defined it in his own mind as a structural change in the blood vessels, will not get very far in treating people who suffer from this disease.

The disease is primarily a disturbance of function, and the true pathology of arteriosclerosis

* Paper read to the Lynn Medical Fraternity, Lynn, Mass., January 18, 1917.

sis is a moving pathology, that is, a pathology which is all the time changing.

The man with fully developed arteriosclerosis is easy enough to recognize. He is usually a ruddy individual with often prominent temporal arteries, a particularly shiny eye, and all the appearance to the untrained observer, of excellent health. But if you talk to him, you find that he has been rejected by a life insurance company, or that he has noticed some discomfort in his chest when he moves about after a full meal. You will find that he has been a great eater of many varieties of food, or that he has been subjected a few years before to some very severe illness, some great nervous strain or some definite attack of food poisoning.

On examination you find his heart hypertrophied, his blood pressure elevated, and the kidney secretion showing a trace of albumen and a few casts.

Thus you have a picture that is duplicated in many individuals over forty years of age who are destined, if not taken care of, to die in the fifties or the early sixties. When they die it will be said that they died of heart disease or kidney disease, or lately—since the term has become popular—of “arteriosclerosis.”

As a matter of fact they did not die of any of these things. They died of the end result of the habitual change in the physiology of the cells of the body. In other words, they died because the process of nutrition of the individual cells has failed through a disturbance of the relationship of these cells to the food materials by which they ought to be nourished and which ought to supply the fuel for their activities.

The medicine of a hundred years ago gradually became founded upon a special consideration of structural changes that were found in the bodies of people who had suffered from particular diseases. Pathologic anatomy was the banner around which nearly all serious workers in medicine rallied. When the physician had been able to define to his pupils, to his fellow practitioners or in his own mind, the exact structural condition of the organs of the sick person before him, he believed that he had accomplished a task that was more or less complete.

During the past thirty years there has grown up a school of medicine that has paid great attention to function, and has based its opinion upon modifications of function, changes in the chemical processes of the body, and in the habitual attitude of the cells toward outside materials which come in contact with the cells as food or in the form of some invading micro-organisms.

As far as treatment is concerned, this is much more fruitful and helpful than a mere determination of pathologic anatomy.

When we think only of a sclerosing organ it does not hold out very much hope to us that we may be able to do anything for the person who is the possessor of that organ; but when we regard the sclerosing organ as simply the

end result of a process that is still going on and which we can detect and arrest, and when we consider the great and wonderful process of compensation, by which additional strength is given to one organ to compensate for another, or one part of an organ to compensate for loss of strength in another part, we have a new outlook that is extremely promising. The main function of medicine is the making of the sick person well. Curing the sick does not necessarily imply making them sound. That is often not possible, and it is not at all necessary. What is necessary is to balance up the damaged organs with compensating forces and side-track the underlying cause of the original injury.

Thus a man with arteriosclerosis, feeling pain in his chest every time that he moves, suffering from a blood pressure that is so high as to be a danger to life, with kidneys that are unable to perform their functions, can by proper diet, exercise, and attention to the state of his intestinal canal, be so improved that he will present all the appearances of health, perform all labor that can be reasonably required of a man of his age, and can live out the period of his expectation of life as laid down by the insurance tables. That is all one could ask.

So long as disease is defined as the dictionary defines arteriosclerosis, as merely a structural change, there can be no hopeful attitude toward degenerative disease.

This is possible only when we define this degenerative condition, which carries off a large part of those who survive to middle life, as a disease consisting of a change in function, or a disturbance of metabolism.

This word “metabolism” is so good a word that it is worth while to have a clear understanding of what we mean by it. In popular language the field of metabolism is covered by the word, “digestion,” but in medical parlance digestion is rather limited to the processes of the stomach or the stomach and the intestines. Metabolism takes in the digestion in the mouth, stomach and intestines, but it takes in a good deal more. It takes in the chemical processes involved in the absorption of food from the intestinal tract by the body, the changes which take place in this food supply by the activities of ductless glands and of the organs that have ducts, and those processes by which the individual cell takes up from its surrounding blood plasma the food materials that it needs for its nourishment and converts them to its own use.

So you see there are in fact two digestions: There is the digestion of food in the intestinal tract, and then there is the digestion of food by the individual cells.

The logical conclusion of all this discussion is, that in the disease—known to the world as “arteriosclerosis”—*diet is of very great importance.*

The diet of arteriosclerosis has been, and is still, a matter of much discussion by writers on

dietetics. In reading from year to year what has come along on this matter of dietetics, it seems to me that there is a great lack of certainty in dietetic teaching. There are many books on dietetics that do not teach anything practical. They are loaded down with tables of food values—with classification of foods. Some of them enter into the naming of a great variety of different proteins, and there is an attempt to lay down a different dietary for every known disease.

It seems to me that most writers on dietetics have started at the wrong end. They have started at the food end and worked toward the person, while they should have started with the individual and worked back toward the food.

In other words, the question is not whether food is good food, or has a certain food value or what its qualities are, so much as whether it is the right food for the one who has to live on it. It would therefore seem that the proper study of dietetics in disease depends upon a study not so much of the food as upon the reaction of the patient to the food.

We know very well that diabetics are idiosyncratic against sugar. We know that gouty people are idiosyncratic against a meat diet. We know that there are certain people who are habitually unable to deal with certain particular foods. Almost anyone can recall some friend or relative who is made definitely ill by some article of food. The person is idiosyncratic to it.

This disturbance of metabolism that is responsible for the degeneration of the human body, leads to death from a disease that may be defined one way or another, but consists practically of an acquired food idiosyncrasy. Much of this danger can be avoided by observations to discover as early as possible when people have acquired such idiosyncrasies. When these are found, until it is proved that the idiosyncrasies have disappeared, the harmful food must be avoided.

This theory, placing arteriosclerosis as an end result of a disturbance of metabolism, consisting in the large proportion of instances of acquired food idiosyncrasies, is one that I have taught for a long while and is accepted by a certain number of people. A good many persons have never heard of it because the part that any one man plays in the large field of medical literature is very small. Some have definitely rejected it, but many have accepted it, so it is necessary to keep on talking about it, until better light appears.

The main point is that it is a helpful theory. It is so easily demonstrated that people with the severer types of arteriosclerosis do well on a strict diet. The diet must not be founded upon the old principle of the low protein diet, but must be founded upon the new principle of the "few protein" diet. The few protein diet implies the absolute exclusion from the dietary

of those proteins which are believed to be harmful to the person concerned.

My experience has taught me that no diet in arteriosclerosis is of much use in helping the patient that is not a very strict diet. It is easy to appreciate this fact if you will remember the definition of the disease, and think of the cells as having this acquired food idiosyncrasy against particular proteins so that the cell is made violently ill every time it gets in contact with the smallest particle of the protein which is harmful to it. A small amount of the protein to which a person is idiosyncratic will keep up the irritation of the cells that will cause trouble with the kidneys and irritation of the heart. The progress of the changes in the blood vessels and of the disease as a whole depend upon the irritation of the cells.

The only dietitians that have ever been successful in the world have been found among those who, by many, have been considered "cranks." The crank has a definite belief in some particular thing which he is anxious to promulgate and to apply in the control of mankind. It is only firm believers in dietetics who have held people to a sufficient adherence to special diets to prove or disprove the value of them.

Nothing has done more harm to dietetics that I know of than the over-emphasis of the quantitative values of food products. Of its economic importance there is no doubt, but it always left out of consideration the individual. You cannot determine how little a particular individual can live on except by experiments on that individual. You cannot discover by general experiment how much an excess of food a person can stand until you try it on the person himself. The war in Europe has taught us that the minimum amount of food required for the population is but a fraction of what they were accustomed to consume, and a visit to any fashionable restaurant in New York City will convince you of what an enormous excess of food mankind can absorb and yet pay no immediate penalty.

The quantitative value of food in calories and grammes of protein is fallacious because of the varying abilities of people to take care of and appropriate the food that is given them. The man with nervous prostration needs a large quantity of food because for some reason his nervous system is badly nourished, and it is only by the stimulating support of an excessive diet that he keeps himself going. A person with a tendency to tuberculosis needs an excessive diet because experience has taught us that over-nutrition of the body tends to restoration of immunity and enables that person to combat the tuberculosis of infection. These are particular reasons for the over-ingestion of food.

On the other hand, there may be reasons for temporary starvation. There is no question of the fact that under starvation things are eliminated from certain structures of the body that

are never eliminated so long as there is a large food supply. You starve yourself for a day and you have a headache. You wonder why it is. It is because the current of nourishment has been turned from the tissues to the blood instead of from the blood to the tissues, and you are absorbing into the circulation part of your own tissue; this leads to a certain mild autointoxication and gives you a headache. If you starve long enough the headache will disappear for the balance would be restored again.

Starvation is of value in giving the kidneys rest, in diminishing the volume of circulating blood, and easing up the whole machinery of metabolism in general. Thus, in Bright's disease, with dropsy and a failing heart, one of the now fashionable treatments is to give the person the so-called Karell diet. The Karell diet is no diet at all! It consists simply of a pint of milk a day. On that diet the heart often picks up its strength, the kidneys functionate and a moderate attack of dropsy is cleared up in a few days. Of course, you cannot keep it up.

The quantitative requirements of diet are thus not without interest and value, but vastly more important is a qualitative consideration of diet in the determination of what food materials are harmful to the cells of the particular person who has shown a tendency to degeneration. Here the popular tradition of mankind will help us. We find that everybody, both lay people and the profession, are prejudiced against meat in so-called Bright's disease, which nowadays is called cardiovascular-renal disease and is synonymous with arteriosclerosis.

We find as we study dietetics that there is very little distinction to be made between the flesh of fish, animals and birds. We find that all these flesh proteins clinically react in much the same way. So we exclude from our dietaries the flesh of living things, the flesh of fish, animals and birds.

When we experiment with eggs we find that of all food products they present the most definite examples of food idiosyncrasies we meet.

Eggs have often been overlooked as important in the dietetics of arteriosclerosis. Yet I venture to say that there is not a single example of advanced arteriosclerosis of the usual type, that is, the kind which comes on insidiously without any apparent cause and slowly develops, that is not idiosyncratic to eggs, and I have seen a number of examples of very bad arteriosclerosis which were due to chronic egg poisoning. They present certain definite characteristics, and are quite easy to observe.

The person that is idiosyncratic to eggs always has a coated tongue. He tells you that since he can remember he has never had a clean tongue. Such a person benefits promptly on an egg-free diet.

I have a doctor under observation who came to me for treatment now three years ago at a time when it did not seem as though he would

live a month. He had a blood pressure of 230 mm. Hg., swollen feet, severe pain in his chest every time he moved around and numbness in one side of the body which harassed him with the fear of a stroke of apoplexy. He had a badly coated tongue, which he always remembered having. This man was put on a strict regimen because it was an unusually severe condition. He was ordered outdoor exercises, strict diet and several doses of castor oil. On several occasions a phlebotomy of a large amount of blood to relieve his circulation, was necessary. He has been faithful to his treatment and is in pretty good condition. Every time he has eaten eggs in the last three years he has had a very desperate setback, with the return of his symptoms, and he has finally convinced himself that eggs are his arch enemy and were a strong factor in the production of his arteriosclerosis.

Fish idiosyncrasy as a definite cause of arteriosclerosis is not so easy to pick out and prove, but I have seen at least two examples about which I have no doubt. Both of them were captains of coastwise steamships, which made trips back and forth, stopping at particular places where they took on oysters every night. These men formed the habit of gorging themselves with oysters every night and somehow they acquired an idiosyncrasy against them, probably by over-ingestion. They both developed arteriosclerosis and both finally died, because at the time I saw them they had great involvement of the kidneys and had carried their high blood pressure for a long time.

The number of examples of arteriosclerosis developing through meat are probably much greater than through any other single object, and that is in accordance with the accepted traditions that condemn meat more than anything else after the disease has developed.

The important point to remember in this consideration of arteriosclerosis is, that it is ordinarily dependent upon acquired food idiosyncrasies. Therefore, meat is not bad for you, eggs are not bad for you,—if you have money enough to buy them in these days,—but if at any time in your life you have an attack of typhoid fever leading to disturbance of metabolism and permanent change in your relation to your food, then these protein foods may irritate the cells of your body and cause arteriosclerosis. Also if you are subjected at any time to great strain, worry, or anxiety, this is capable of disturbing the metabolism and causing particular proteins to irritate rather than nourish the body. Or, this food idiosyncrasy may be set up from an accidental attack of food poisoning, the so-called "ptomain poisoning;" or it may be acquired from the over-ingestion of some particular type of protein.

One of the most interesting examples to me was a man who told me that when he was a boy he gambled for eggs one Easter and won a great many. He consumed all he wanted—and there

were several dozen. He was pretty sick, but he got over it. After that at regular intervals of a few days he was sick again, and no one could account for it. He would go along for a day or two and then have an attack of nausea and vomiting. Finally some one discovered that the attacks followed the eating of any food in which there was a little egg. An egg in any form or quantity would make him sick, and for twenty years he never could eat anything with the smallest bit of egg in it. Being a traveling man it was a source of great trouble. After years he partly recovered from the trouble and was able to eat eggs again without discomfort, but as he acquired arteriosclerosis, it is probable that the sensitiveness to eggs remained in a subsymptomatic stage.

In considering the dietetic examples of arteriosclerosis first, I have touched on what I believe the most important causes. However, there are a considerable number of cases that are due to germ infection.

At first sight, it will seem that this would constitute a very different class but it does not, because bacteria do not act as living organisms in their effect on the body, but on account of the particular relations of the proteins of their bodies to the cells of the animal that they have invaded. You get exactly the same immediate action whether you inject live or dead bacteria into the living body. Of course, the live bacteria can go on to multiply and in that way they are much more dangerous, but the immediate effect is much the same whether live or dead bacteria, because they act only through the chemical constitution of their bodies. Now when the body is invaded over a long period by a bacterium against which that body reacts or to which that body is idiosyncratic, then the cells are irritated very much the same way as they are irritated by food proteins and the resulting arteriosclerosis is very much the same. In this way arteriosclerosis develops in some conditions of chronic suppuration, but there are a great many cases of chronic suppurations which do not develop arteriosclerosis because the body is not sensitive.

The person may escape because the bacteria may not get into the circulation or because the cells are not idiosyncratic against them. Thus probably the colon bacillus frequently enters the circulation and does not do any harm. But if the person develops an idiosyncrasy against the colon bacillus, it becomes a source of irritation, may set up abscesses and do a variety of damage. In this way the same rule applies to germs that applies to foods.

We must also consider the form of arteriosclerosis due to specific disease. The syphilitic cases stand out clearly by themselves. In clinical medicine it is very difficult to pick them out, though of course, now we have the Wassermann reaction to help. However, they do not constitute a very large group. Considering the num-

ber of people infected by syphilis, the number that go on to chronic involvement of the blood vessels and to arteriosclerosis is not very great. The nervous system is more apt to suffer than the blood vessels in proportion to the number of people infected.

Then there is a group of cases of arteriosclerosis where we cannot be certain as to the origin. They occur in comparatively young people and the infection is not always clear. A good many of these sufferers have had scarlet fever, and some of them a severe infection from gonorrhea. Many of them seem to be primarily disease of the kidneys.

What has delayed our appreciation of the relation of diet to arteriosclerosis has been the existence of these types that depart from the rule, as it were—types that were due to syphilis or infection. In the vast majority of examples, there is no such history. Nearly always you can discover a history of an acute disease, a great period of severe worry, or food poisoning.

If I have succeeded in giving my readers an adequate impression of what this disease is—this arteriosclerosis of our time, the Bright's disease of former times, and the "heart trouble" mentioned on every side—I will not have written in vain.

Arteriosclerosis* is a disease that kills more than twice as many in our generation as formerly. Just why this is so I do not know, but the life insurance people whose business it is to record and study mortality give this out as a definite fact. There is no doubt that it is carrying off a great number of the most useful people, and to check this we need some conception of the nature of the disease. As long as we call it "kidney" or "heart disease," we will never get very far in finding a cause. However, as soon as we recognize it as a disturbance of the chemical functions of the body, we think of a possible change of our food. Cold storage has come in and there is a much larger consumption of food than formerly. People take less exercise. Everybody rides nowadays—if not in their automobiles, in the street cars or some other conveyance. Machinery has taken away the necessity for physical labor. In this way many people are deprived of the best preventive in the world for disturbance of metabolism, namely, exercise. Whether the cause of the increase in arteriosclerosis is a change in our food habits, in our habits of exercise or the so-called strenuous life of modern times, there can be no doubt of the importance of food as an intermediate cause and no doubt of the importance of diet in prevention and cure.

* For a further elaboration of this disease, see Bishop's "Arteriosclerosis" Oxford Med. Pubs., London, 1915.

Original Articles.

A STUDY OF 29 CASES OF ECHINOCOCCUS DISEASE AT THE MASSACHUSETTS GENERAL HOSPITAL.

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The literature of hydatid disease in human beings is very extensive. The disease has been studied in all its manifestations and conditions, as to etiology, pathology, diagnosis and treatment. One excuse for adding to this voluminous literature is to emphasize the fact that with the great influx of immigration from Southern and Eastern Europe, the disease is no longer rare in this community, and the possibility of its occurrence should be borne in mind in all cases of obscure tumors among foreigners.

Etiology and Pathogenesis. In the whole range of medical phenomena there is nothing more erratic or bizarre in its localization or clinical manifestations than the echinococcosis cyst. Cases have been reported in nearly every organ of the body; no age is exempt. The disease has been noted in infants, and in early childhood, but is most commonly observed from the 20th to the 40th year. Both sexes are about equally affected.

The echinococcosis disease is very widely distributed, almost as much as the dog itself. Its incidence, however, varies greatly in different countries. It is very common in Iceland where the disease is said to contribute to about one-seventh of the death rate. According to Magnusson, the disease is on the decrease now, due to broader education of the public in regard to prophylaxis. Next to Iceland in frequency of infection are the sheep and cattle raising countries. It has been a scourge in Australia, New Zealand, the Argentine Republic and Uruguay. The spread of the disease in these countries is undoubtedly due to the prevalence of echinococcosis infection in sheep, cattle and swine, and the careless way in which at many abattoirs the offal from these is given to dogs, thus completing the parasitic cycle.

The continent of Europe has not been exempt. In Germany the provinces of Pomerania and Mecklenburg are most severely infected. In the strip of Russia the disease is also common. In Southern Europe, certain provinces of Italy, such as the Maremma, the Neapolitan provinces and Sicily, certain parts of France, and in Greece, the disease is common, as may be readily seen from the frequent case reports in the French and Italian literature. We have no available statistics of the disease among the Ar-

menians and Syrians, but undoubtedly the disease is prevalent, as the social condition of the people is very primitive, and their relations to the domestic animals, particularly the dog, are more intimate than among those of a higher civilization.

A considerable number of cases have been reported in the United States and Canada, especially in Manitoba where there are many Icelanders. Most of the reported cases are among foreigners who brought their infection with them to this country. Very few indigenous cases have been reported. Echinococcosis infection of the dog seems to be very rare in this country. Because of the ever-increasing immigration of the lower classes from Southern Europe, Turkey and Armenia to America, however, and with the permanent opening of the Panama Canal, the disease will probably be more often met with than in the past.

The disease is caused by a minute tapeworm, the *tenia echinococcus*. This tapeworm exists in the intestine of the dog, cat, jackal, wolf, and perhaps in other carnivorous animals. The infected animal excretes in the feces myriads of microscopic eggs of this worm, which are distributed over the grass and vegetation of fields and hillsides, and into the water of streams, lakes, ponds, and unprotected wells and reservoirs. Once the waters are infected with hydatid ova the disease may be distributed to a number of animals, and perhaps water fowl may play a not unimportant rôle in its spread. According to Gordon McDonald of New Zealand, dust storms act as carriers. The eggs are light and are easily blown about in the dried mud of towns, which is constantly being pulverized.

Human beings, by drinking contaminated water, or by eating uncooked vegetables and roots, particularly water-cress, dandelions and lettuce, may become infected. Infection may also take place by direct contact with infected dogs, as in handling or petting them. Wherever there is close association between man and dog, personal uncleanness, and carelessness in handling food, there is most likelihood of infection. Domesticated and grazing animals, particularly sheep, cattle and swine, are commonly subject to hydatid disease in infected districts. Wild animals may also be infected; the disease having been reported in twenty-seven species of mammals. The dog, which harbors the parent parasite, the *tenia echinococcus*, is not itself subject to the hydatid form of the disease, which is the larval stage in the life cycle of the parasite, and occurs only in the intermediate hosts such as the domestic animals and man, the result of ingestion of the eggs. If the dog is fed upon flesh or viscera containing hydatid cysts, it develops in turn an adult tapeworm, and the cycle is completed. When the eggs of the *tenia echinococcus* are swallowed by the intermediate host, the gastric or intestinal secretion attacks their outer shells, and the embryos are set free.

By means of their six hooklets they burrow into the walls of the stomach or intestines, frequently penetrating the ramifications of the portal vein, and by it are carried to the liver where they may be arrested in its capillary circulation.

It is in the liver that the great majority of hydatid cysts occur. The embryos may penetrate directly into the systemic circulation and reach the heart, and from there be carried to the lungs. If they succeed in passing through the capillaries of the lungs, reaching the general circulation, they may go wherever the blood stream takes them, to form hydatid cysts in the kidney, brain, or muscles. It is possible that the embryo may reach the circulation through the lymphatic system; it may also directly penetrate into the peritoneal cavity. It is thought also, that under certain conditions it may enter through the respiratory tract and develop in the lungs. Hutchins of Australia reports a case of a farmer who was bitten in the buttock by a cattle dog, and twenty years later developed an echinococcus cyst in that region. Prat of Uruguay reports a case of echinococcus cyst of the tongue. This appears to be the only case of the kind in the literature. These cases would seem to show that the part generally understood to be played by the digestive juice in liberating the ovum from its glutinous sheath, is not absolutely necessary for its development.

The embryo having once reached its destination, undergoes certain changes. The hooklets disappear, and the embryo is gradually converted into a small cyst, with two distinct layers containing a clear fluid. The cyst is enveloped in a fibrous covering, the result of reaction on the part of the neighboring tissues. Buds develop from the parenchymatous layer of the parent cyst, from which daughter cysts develop. As the parent cyst grows, it may become packed with innumerable daughter cysts, which in turn may give rise to granddaughter cysts. From the lining membranes of the cysts, little bodies, armed with hooklets and known as scolices, are developed, which represent the heads of future tæniæ. If these scolices gain access to the intestinal tract of the dog, they develop into adult worms.

The disease exists in two forms, the most common being the echinococcus unilocularis, and the rarer form, echinococcus multilocularis vel alveolaris. According to Watson, the echinococcus multilocularis has never existed in Australia, either in man or beast. Magnuson, in a report of 214 cases in Iceland, noted no case of the alveolar type. Neither did Cranwell and Vegas of the Argentine Republic, in a large series of cases, note a single case, nor Prat of Uruguay in a series of 149 cases. In Lyon's study of the disease in North America, out of 241 cases only four were of this type. In none of our cases at the Massachusetts General Hospital was the multilocular type noted.

The distribution of the echinococcus alveolaris

is peculiar, being almost exclusively restricted to two principal regions, one comprising Southern Germany, Switzerland and the Austrian Alpine region, the other, Southeastern Russia and Siberia. Posselt attempts to explain this distribution by reference to the fact that this form affects almost exclusively cattle, and very rarely sheep. In the districts in question, cattle raising, rather than sheep raising, is the principal industry. Ostertag, quoted by Frielberger and Fröhliner, considers it probable that the multilocular echinococcus does not represent a mere variety of the ordinary echinococcus, but a particular species with an, as yet, unknown tapeworm.

Hydatid cysts are of slow development, and may reach enormous size. Magnuson has reported one case under observation for forty years. They have been reported as weighing over 30 lbs. Death of the embryos may occur, with degeneration and calcification of the cyst. A fatal outcome may result from pressure of the cyst upon vital organs, or by encroaching upon and destroying the tissue of essential glands, the secretions of which are necessary to life. A serious consequence is infection, which may take place spontaneously, resulting in abscess formation, and occasionally pyemia. The cyst may rupture into any neighboring hollow organ, resulting in discharge of the smaller cysts into the stomach, intestine, bladder, or respiratory passages. They may rupture into the peritoneal cavity with dissemination of the growths. The cystic fluid contains a virulent toxic agent, which, when liberated into the tissues or peritoneal cavity, causes inflammatory reaction and marked constitutional disturbances, occasionally sudden anaphylactic shock and urticaria. The fatal result in Case 8 of our series may have been due to anaphylactic shock.

The bile passages and large venous trunks may be invaded, with serious results. Occasionally the cysts rupture externally and are discharged on the surface of the body.

Symptoms. The symptoms of echinococcus disease are those of a slowly growing tumor, varying with the location of the growth, and are well exemplified by the appended case histories.

Diagnosis. A slowly growing tumor, particularly one involving the liver, without cachexia, in a young adult who has lived in an infected district, is characteristic of the disease. Occasionally the so-called hydatid thrill, which is unmistakable and pathognomonic, may be elicited. It was obtained in two of our cases. The discharge of daughter cysts or microscopic heads or hooklets from the body cavities is, of course, positive evidence.

Laboratory Tests. Memmi in 1901, studying the blood of six patients suffering from hydatid of the liver, noted an eosinophilia varying from 6 to 18%; others confirmed Memmi's findings, and it was thought that an increase of eosinophiles was pathognomonic of the disease. In

some cases of the disease eosinophiles had been found as high as 68%. It is claimed that an eosinophilia is more frequent in patients where the *tenia echinococcus* is alive, and is absent where it is dead; also that it varies in the same individual without any apparent cause. That the eosinophiles increase after an exploratory puncture, operative interference or spontaneous rupture of the cyst.

Kreter and Zapelloni independently made an exhaustive study on the subject of the value of the various tests for *echinococcus* disease, eosinophilia, the precipitin test of Fleig-Lisbonne, and the complement-fixation test of Bordet-Gengou based on the Wassermann reaction, as first applied by A. Ghedini. They conclude that eosinophilia is present in about 60% of *echinococcus* cases, and when present is suggestive, but not confirmatory, of the disease. Eosinophilia is present in many other conditions. In our own series of cases, eosinophilia was present in only one case (No. 26) in which there was 7% of eosinophiles. The precipitin test of Fleig-Lisbonne is generally conceded to be inconstant, and of no great diagnostic value.

The complement-fixation test of Bordet-Gengou, based on the Wassermann reaction, is the most reliable test we have. This test was first applied by A. Ghedini in Maragliano's clinic at the University of Genoa in 1906. Ghedini used as an antigen the cyst fluid obtained from an *echinococcus* cyst of the liver in a boy of thirteen. In 1909 he reported that the test had been found positive in 40 out of 42 cases of proved *echinococcus* disease. His findings have been confirmed by other investigators, especially Kreter and Zapelloni who reported the test positive in 93% of their cases.

In the last three years the *echinococcus* complemental test has been used at the Massachusetts General Hospital by Dr. J. Homer Wright. Ninety-seven tests in all have been made. Twelve were positive and eighty-five were negative.

Of the twelve positive cases, seven proved to be *echinococcus* disease. One of the five other cases at operation showed an abscess in the abdominal wall, which upon microscopic examination showed no evidence of tuberculosis. Its appearance was not inconsistent with *echinococcus* cyst. One had clinically a large spleen and liver, a positive Wassermann reaction, and was not operated upon. Three were clinically syphilis and had weak to strongly positive Wassermann reactions.

Among the eighty-five negative cases, twenty-four had a positive Wassermann reaction. The Wassermann reaction was negative in five of the proved *echinococcus* infections. It was not done in the remaining two.

There was some variation in the strength of the *echinococcus* reaction in the same patient from time to time. The cyst fluid proved a better antigen than the alcoholic extract of the cyst

wall. The cyst fluid was found active as an antigen after more than eighteen months outside of the body.

Treatment. The treatment of the disease is purely surgical. The use of salvarsan has been proposed by Kolbe, who reported two cases in which it seemed to have had some effect in destroying the embryos. Reference to the literature shows that it has been tested extensively by others, notably Deve, Payenneville and Weinberg, with absolutely negative results. It occurred to us independently to make use of it in one case in which the complement-fixation test remained positive after operation; there was no apparent effect on the reaction. Tapping of cysts through the abdominal wall is to be condemned on account of the danger of leakage of fluid and daughter cysts into the peritoneal cavity, with dissemination of the disease. The tumor should be exposed by surgical incision, and a thorough exploration of the peritoneal cavity in abdominal cases for subsidiary cysts should precede the attack on the main cyst. After exposure and adequate walling-off, the cyst should be tapped and the fluid carefully withdrawn. The fibrous capsule should then be incised cautiously, whereby the inner cyst wall may often be separated from its outer sheath and drawn out entire. This is the ideal procedure. When this is not possible, on account of infection, adhesions, calcification, etc., as much of the inner cyst as may be is removed, and the cavity packed with gauze and allowed to granulate. Marsupialization is not often necessary with modern methods of walling-off, but is desirable in cases in which all the daughter cysts have not been removed at the primary operation. Of course it is most desirable to remove all of these whenever possible. In suppurative cases free drainage must be established. The results of the modern operation, in the absence of suppuration in the cyst itself, are extremely good.

ABSTRACTS OF CASE HISTORIES.

CASE 1. *Echinococcus cyst of liver.*

M. R. 321-244. J. P. Male. Age 34. Born in England. Weaver. Admitted August 6, 1875. Well up to 5 months ago, when he began to have pains in his stomach after meals. The pain was located on the right side, over the ribs and at this spot a tumor soon made its appearance. Jaundice and marked loss of flesh. On examination there was tenderness in the epigastrium and right hypochondrium, with an area of dullness extending from the costal margin to within two inches of the umbilicus.

Ten days after entrance it was noticed that there was a sudden decrease in the size of the tumor. A few days later, he passed with the defecation a number of cystic bodies which were preserved for examination. On August 30 the tumor was aspirated and about 40 ounces of yellowish-brown fluid withdrawn, having a powerful fetor; the fluid containing bile, pus and albumin. Considerable pain and fever followed the aspiration. The swelling nearly wholly

disappeared, leaving slight tenderness. Discharged relieved on September 9th.

CASE 2. *Echinococcus cyst of liver.*

E. S. 266-16. C. H. Sailor. Age 32.

Operator, Dr. M. H. Richardson.

Admitted to hospital August 3, 1891. Always had a dog on board ship. One month ago was taken with abdominal pain and nausea. A few days ago noticed a lump in the right side of the abdomen. Chills and fever.

A strong, robust man, with a large tumor in the right side of abdomen, extending from the costal margin to the crest of the ilium. The mass gave a sensation of fluctuation but no thrill.

Operation. Incision made in the flank over the tumor. Wall of the mass sutured to the parietal wound. An incision was then made through about one-quarter inch of normal liver substance into the cyst. A very large number of cysts and quantity of pus evacuated. Cavity packed with gauze. Patient discharged in excellent condition.

Case reported by Dr. M. H. Richardson. BOSTON MEDICAL AND SURGICAL JOURNAL, April 28, 1892.

CASE 3. *Echinococcus cyst of liver.*

E. S. 342-90. Armenian. Gardener. 28 years old; in the United States 7 years. September 6, 1898.

Operated on by Dr. W. M. Conant, September 13, 1898.

Previous history of malaria. Three years ago abdomen injured by a falling iron pipe. No subsequent symptoms except a slight swelling which soon passed off.

Present Illness. Thirteen months ago first noticed the presence of a tumor in the right hypochondrium. This was at first the size of an egg, then gradually increased. Has lost 30 lbs. in weight in 6 months.

Well developed and nourished man. In the right hypochondrium, extending from the costal margin above, to the level of the umbilicus below, there is a rounded swelling, flat to percussion, tense, non-fluctuant; no tenderness; smooth in contour. Heart pushed up; apex beat at 4th interspace.

White cells, 10,500.

Patient's evening temperature of 101 to 101.5.

Operation. Cystic tumor connected with under-surface of the liver was exposed, tapped, and clear fluid withdrawn. The cyst wall was then incised. Large cavity cleaned out with gauze. Portion of sac excised, edge of sac sutured to abdominal wall. Wound packed with gauze. Patient made a good recovery. Discharged relieved October 30, with a small sinus.

Pathological report by Dr. W. F. Whitney: cysts containing scolices characteristic of *tenia echinococcus*.

CASE 4. *Echinococcus cyst of liver.*

S. S. XXIX-68. R. G. Irishwoman. 31 years old. Single.

Operated on by Dr. C. B. Porter.

Admitted to hospital November 15, 1898. Five years ago had tumor removed from liver. Well for 3 years; then pains returned in region of hypochondrium. Examination negative except for large liver.

Operation. Cyst of liver tapped, peritoneum sutured to fibrous cyst wall; cyst then opened and inner sac removed.

Cavity packed with gauze. Convalescence slow. Considerable drainage.

Discharged relieved December 28, 1898.

Pathological report, *echinococcus cyst*.

CASE 5. *Ruptured echinococcus cyst of liver.*

S. S. XXX-66. L. P. Russian. 19 years old.

Operated on by Dr. C. A. Porter.

Brought to Accident Room July 13, 1899, with a history of having been struck in the stomach and knocked down. Patient was shrieking with pain, vomiting large quantities of watermelon at intervals.

Examination. Marked emaciation. Abdomen very prominent, especially in upper half, which was distended and rigid. Evidence of free fluid in the abdomen. No definite tumor.

White count, 34,000.

Operation. Incision through the right rectus. Large amount (estimated at 3 quarts) of bloody fluid escaped. A ruptured cyst was found the size of a football, lying free in the peritoneal cavity; exploring the liver there was found an opening on the upper surface of the middle of the right lobe, which led into a large cavity. This cavity was packed with gauze and a portion of the sac was sutured to the abdominal wall. Considerable post-operative shock. Slow convalescence.

September 9th, discharged with a discharging sinus.

October 21, 1899, re-admitted for discharging sinus. The sinus was opened up again, curetted and cauterized.

Uneventful convalescence.

CASE 6. *Echinococcus cysts of omentum and liver.*

E. S., 670-259 and 672-11. S. K. Greek. 27 years old.

Operated on by Dr. F. B. Harrington.

Admitted to the hospital December 23, 1899. In this country 7 years. For a month has felt pain in the region of the liver and noticed a tumor which has been steadily enlarging. Unable to work for two weeks.

Examination showed considerable bulging of the lower ribs on the right side. The mass is dull on percussion, extends from 4th costal space to the level of the umbilicus on right.

Operation. January 6, 1900. Incision through right upper rectus; a cyst the size of a hen's egg removed from the omentum. Liver found much enlarged. Intestinal clamp placed on the portal vein and hepatic artery; incision made through anterior surface of the liver. A large cyst with thick, white wall opened, with escape of a large quantity of fluid. Sac of cyst removed intact. Another cyst, the size of a baseball, found at the upper portion of the liver; the sac of this was likewise removed. A fourth cyst, the size of a baseball, was found in the left lobe of the liver, which was not removed. Edges of liver wound sutured; clamps removed from portal vein and hepatic artery. Three rubber tubes placed in cavity of liver. Patient had some post-operative bronchitis; drained considerable bile and blood from the wound. On the 7th day of convalescence, patient suddenly became markedly cyanotic and died very suddenly.

Autopsy No. 2518. Echinococcus cysts of liver, broncho-pneumonia, fibrino-purulent pleuritis, chronic peritonitis. Hyperplasia of spleen, congestion of kidneys. Pathological report of specimen removed at operation.—*echinococcus cyst*.

CASE 7. *Echinococcus cysts of liver and lungs.*

S. S. No. 130122. K. S. Armenian. Laborer. 40 years old. In this country 6 years.

Operated on by Dr. C. B. Porter.

Admitted to hospital December 13, 1902.

For the last 10 weeks there has been progressive loss of strength and weight, accompanied by pain in the epigastric region. Two weeks ago stopped work. History of fever but no chills.

A well-developed man, much emaciated and pale. Very slight jaundice.

No leucocytosis.

One-tenth of albumin in the urine.

The lower portion of the right chest bulging. There was flatness from the 4th rib in front to 4 fingers' breadth below the costal margin. Below the ribs there was a bulging tumor extending nearly to the median line.

Operation. Incision over the tumor which consisted of an enlarged liver. Aspirating needle found pus on the second attempt. An incision was then made through the liver substance, and pus, gelatinous material and cysts, estimated at 4 quarts in amount, evacuated. There was considerable hemorrhage. Wound packed with gauze. Died on the 4th day after operation.

Autopsy No. 981 showed an evacuated echinococcus cyst of liver; small abscesses of liver, and echinococcus cysts of lungs.

Case reported by Dr. A. K. Stone in the BOSTON MEDICAL AND SURGICAL JOURNAL, September 3, 1903.

CASE 8. *Echinococcus cysts of peritoneal cavity and liver.*

W. S. 459-277. Irishman. Aged 52. Single.

Admitted to hospital January 29, 1904.

Operated by Dr. M. H. Richardson.

Previous history. Six years ago while in Havana was seized with a severe pain in the right side, associated with cough. Was operated on later in New York.

Present illness. Fairly well up to one and one-half years ago, when he began to vomit. Noticed a lump in the abdomen which has grown larger lately. Has felt weaker.

Well developed and poorly nourished man. Liver dullness extends from the seventh rib to level of the umbilicus. Abdomen generally dull to percussion. Below the liver to the right of the umbilicus, a hard, firm mass visible through the abdominal wall, about the size of an orange, non-fluctuant. Another one occupying the bladder region. In the left iliac region there is another indefinite mass. By rectum a large mass can be felt in the pelvis.

Hemoglobin 50 per cent.; white cells 5300; red cells 3,888,000.

Operation. Median laparotomy. Numerous cysts found, varying in size from a walnut to that of an orange; most of them were attached to the mesentery. Five of these were punctured and the lining membranes removed; two were removed entire. Patient's condition suddenly failed during operation and he died.

Microscopic examination of specimens by Dr. W. F. Whitney showed them to be echinococcus cysts.

CASE 9. *Echinococcus cyst of liver.*

W. S. 499-191. Italian woman. 24 years old. single.

Admitted to hospital April 14, 1905.

Operated on by Dr. S. J. Mixter.

History of pain in the right half of abdomen for one month; intermittent in character. No vomiting. Never jaundiced.

Examination. Negative, except for a bulging mass below the costal margin on the right; firm, tender, moves with respiration.

Operation. Tumor of the right lobe of the liver with intestinal adhesions. Tumor enucleated from the liver. Bleeding controlled by packing. Much post-operative pain; considerable drainage. Steady convalescence.

Discharged, relieved, May 16, 1905.

May 25, 1905; in good health.

Began working four months after operation.

Pathological report of specimen, echinococcus cyst.

CASE 10. *Echinococcus cyst of liver.*

S. S. CXXXIV-77 and CXLII-47. Swede. Age 49. Single.

Admitted to hospital August 24, 1906.

Operated on twice by Dr. D. F. Jones.

Five months ago jaundice, with clay-colored stools. About the same time a small lump was noticed in the epigastrium. The lump has been enlarging lately. Never painful.

Examination. The tumor extends from the costal margin on the right to below the level of the umbilicus; dull on percussion; slight tenderness on pressure; suggests cysts on palpation.

Operation. Large cysts of the liver opened and drained. Condition of the patient did not permit of the removal of the lining membrane. Uneventful recovery.

Pathological report. Echinococcus cysts.

June 29, 1907, re-entered hospital with a history that up to one month ago he had been well. Then began to have sharp pain in right side; jaundiced. Vomited for the last three days.

Examination. Marked jaundice. Definite tumor on the right side, extending about three inches below costal margin.

July 6, 1907. Operation, incision and drainage of echinococcus cyst of liver. Uneventful convalescence.

Reported August 1, 1908. Excellent condition.

CASE 11. *Echinococcus cysts of pleural cavity and peritoneum.*

E. M. 661-97 and E. S. 558-175 and 572-91. Russian farmer. 22 years old.

Operated on by Dr. F. B. Harrington.

Admitted to hospital December 12, 1906.

In the United States three and a half weeks. Was taken ill on steamer; ill ever since. Sole complaint is pain in the right side. One day feels pretty well, next day sick all over.

Signs of fluid in the right chest.

On December 13th chest tapped twice in the posterior axillary line and about one pint of thin greenish fluid obtained. Abdomen flat, held rigid, tympanitic throughout, no masses. Liver border two inches below costal margin. Hemoglobin 75%, white cells 18,000.

Operation. Resection of rib; pleural cavity opened, with the escape of cysts of all sizes. Cysts repeatedly discharged from wound during convalescence. Masses developed in the abdomen, one in the iliac fossa, another in the region of the bladder.

Operation January 19, 1907.

Pelvic cavity found full of cysts which were adherent to the rectum, bladder and intestines. Cysts

freed and removed. Small incision made in the intestine and a mass of ascaris lumbricoides removed. Intestinal wound sutured. Pelvis flushed out with corrosive sublimate 1-1000 followed by salt solution. Abdominal wound closed without drainage. Good recovery. Purulent discharge with occasional cysts continues from the chest wound.

Operation (February 8.)

Section three inches long of 5th, 6th and 7th ribs removed. Cavity curetted. No further cysts found. Discharged to Convalescent Home on March 6th. Subsequent history unknown.

CASE 12. *Echinococcus cysts of common bile duct and lesser peritoneal cavity.*

W. S. 559-83. Italian laborer. 28 years old.

Operated on twice by Dr. S. J. Mixer.

Admitted to hospital March 22, 1907. During the last two years and also eight months ago had attacks similar to present illness; pain in right upper quadrant.

Jaundiced for 8 days, tenderness and rigidity in region of gall bladder.

Liver dullness extends from 6th space to 2 inches below costal margin; edge of liver distinctly felt.

Operation. Cholecystectomy, for cholecystitis. During convalescence had an attack of pain in the region of wound, with some elevation of pulse and temperature. Discharged to Convalescent Home.

Re-admitted from Convalescent Home, April 28, 1907, with temperature, pain and chills. Marked tenderness over whole right side of abdomen.

Second operation, April 30. In the region of the common duct a cyst was found lying chiefly in the lesser peritoneal cavity. Cyst tapped, pus and bile drawn off. It was then freely incised, with the escape of about 8 oz. of thick bile-stained fluid containing many small ruptured and unruptured cysts. Cavity irrigated, drainage tubes inserted. Uneventful convalescence.

Pathological report of specimen, echinococcus cyst. Patient later went back to Italy and reported to be in good health.

CASE 13. *Echinococcus cyst of gastro-hepatic omentum.*

E. S. 580-269 and E. M. 671-271. Greek laborer. 23 years old.

Operated on by Dr. Hugh Williams.

Admitted to hospital July 15, 1907.

For eleven months has had considerable soreness in epigastrium. No vomiting or jaundice; has lost 17 pounds in weight.

Examination. Abdomen generally tympanitic, save over right hypochondrium where there is slight dullness just below right costal margin. Heart and lungs, negative. Spleen and liver not palpable. Reflexes normal.

Hemoglobin 90 per cent.; white cells 4,200. Stools negative.

Typical hydatid thrill was elicited over the gall-bladder region.

Operation. Gall-bladder incision. Mass felt posterior to gastro-hepatic omentum, under the left lobe of the liver. Walling off gauzes placed; mass incised; a large hydatid cyst opened; large number of small cysts evacuated. One rubber tube and two gauze wicks placed in the large cavity. Slow convalescence. A subdiaphragmatic abscess was opened at the end of two weeks. Gradually improved. Jaundice which had been present cleared

up. Patient was discharged on September 7th, with small sinus, to the Convalescent Home. Subsequent history unknown.

CASE 14. *Echinococcus cyst of liver.*

S. S. CXLVIII-253. Greek peddler. 35 years old.

Operated on by Dr. D. F. Jones.

Brought to Accident Room July 19, 1907, with history of attacks of pain in the epigastrium, of indefinite character, for the last 6 months. Noticed no jaundice. For the last 10 days pain has been more severe in right upper quadrant.

Examination. Abdomen rigid; some tenderness on pressure. Edge of liver two fingers' breadth below costal margin.

Operation. Median laparotomy. Large cyst of the left lobe of the liver disclosed; walling-off gauzes carefully placed; cyst incised, with the escape of 1 pint of fluid and many daughter cysts. Cyst cavity lightly curetted, wiped with gauze and packed. Considerable post-operative shock and restlessness. Second day patient began to vomit; pulse poor; increasing abdominal distention. Gradually failed and died on the third day.

Pathological report, echinococcus cyst.

CASE 15. *Echinococcus cyst of liver.*

E. S. 606-1. Iclander. Age 33. Traveled in this country 17 years.

Operated on by Dr. C. L. Scudder 3 times, 4th time by Dr. Hugh Williams.

Admitted to hospital March 17, 1908. For three years attacks of pain in right hypochondrium, with chills, nausea and vomiting. Attacks come suddenly, recurring every 3 to 5 weeks. Has had some pain in the lower abdomen. For the last 4 weeks attacks of pain have been worse, with chills, fever and sweating.

Examination. Small, poorly developed and nourished woman. Tenderness, rigidity and spasm in right hypochondrium; slight tenderness in right lower quadrant. Liver felt two inches below costal margin.

Operation. (March 25, 1908.) Exploratory laparotomy. Adhesions about the gall-bladder. Gall-bladder itself not involved. Large cyst of the liver found above the gall-bladder. Cyst opened and cavity curetted; edge of sac sutured to the peritoneum. Cyst cavity swabbed out with Harrington's solution and packed with gauze.

Pathological report by Dr. W. F. Whitney; echinococcus cyst. Patient ran a septic temperature.

Secondary operation April 8th. Previous incision opened, another cyst removed from the lower surface of the liver, and an abscess of the liver substance incised and drained. Patient ran an irregular temperature, with occasional chills.

X-ray of chest negative.

May 11th, third operation. Incision re-opened, no more cysts found. Old abscess re-opened and a few ounces of thin grumous pus removed; drained with tube and gauze. After a few days chills recurred, with temperature. Considerable discharge from wound.

June 20th fourth operation. Liver explored. A number of soft spots on the surface of the liver found, which, on puncturing, emitted small amounts of pus. Drainage.

Patient put on vaccine treatment with some improvement. July 30th, discharged unrelieved.

CASE 16. *Echinococcus cyst of liver.*

W. S. 565-265. Italian laborer. 20 years old. Two years in this country.

Operated on by Dr. F. G. Balch.

Admitted to hospital June 15, 1908. For about one month has noticed a swelling in the right hypochondrium which is painful and prevents working. Swelling came on suddenly. Never jaundiced.

Examination. Abdomen presents a smooth, rounded swelling in the right upper quadrant, causing a bulging of the lower ribs. Tumor is tense, not tender; descends with respiration. Liver dullness extends to within one inch of umbilicus.

Operation. Echinococcus cyst on the anterior portion of the liver disclosed, tapped, incised and marsupialized. Clear fluid escaped with one daughter cyst. Convalescence uneventful.

Patient had more or less pain following the operation, for 7 months; vomited frequently, unable to work. Re-entered hospital and remained 10 days; the symptoms quieted down without further operation.

Six years later patient reported in excellent health.

CASE 17. *Echinococcus cyst of liver.*

W. S. 631-287. Greek laborer. 32 years old.

Operated on by Dr. F. G. Balch.

Admitted to hospital May 26, 1909.

One year ago attack of severe abdominal pain; had to give up work. A week later another attack of pain. Since then has had numerous attacks lasting about one hour; relieved by heat. No connection with meals. Vomited twice, jaundiced for two months. Last attack of pain, two days ago, required morphia.

Examination. Prominence in epigastrium over left costal edge, where there is an excoriation of the skin. Spleen palpable. Liver dullness extends from fourth rib to two inches below costal margin. Tender area in middle of epigastrium. No shifting dullness.

Blood. Hemoglobin 80 per cent.; white count 11,800; differential count not remarkable.

Operation. Cholecystostomy with removal of small cyst from gall-bladder, no stones. Liver seemed enlarged, with white spots on it. Convalescence uneventful.

Examination of cyst suggested echinococcus disease.

Re-admitted into the hospital with history of chill three days ago, pain in chest, profuse sweating and fever.

White count 18,300.

Abdomen soft to pressure, tympanitic. Liver edge not felt.

Operation. Exploratory laparotomy; nothing found. Patient failed rapidly and died.

Autopsy No. 2399 showed echinococcus infection of liver; abscess of liver; fibrino-purulent peritonitis.

CASE 18. *Retroperitoneal echinococcus cyst.*

W. S. 649-91. German woman. Age 48. Married.

Operated on by Dr. Hugh Cabot.

Admitted to hospital November 26, 1909. No previous illness except stomach trouble. Noticed lumps in both breasts, May, 1909, about size of hen's eggs. No pain or tenderness.

In the abdomen there is an indefinite tumor extending from the costal margin to one and one-half

inches below umbilicus on the right side; smooth contour; no tenderness.

Cystoscopy and catheterization of ureters negative.

White count, 11,400.

Operation. December 13; laparotomy. Large retroperitoneal tumor exposed. This was opened with the escape of a great number of small cysts, and a large amount of thick, yellowish, custard-like material. Sac well dissected out from the surrounding tissues and removed entire; wound closed without drainage. At the same sitting the left breast was amputated for cystic disease.

Pathological report; echinococcus cyst.

Patient made an uneventful recovery.

Reported at the hospital January 10, 1911. Feels well. Gained 30 pounds.

CASE 19. *Echinococcus cyst of left kidney.*

No. 194553. Italian laborer. Age 23. Single.

Operated on by Dr. Hugh Cabot.

Admitted to hospital March 23, 1914.

As a boy in Italy had a dog that he played with and often slept with.

Two years ago passed a small colorless, bean-like body in his urine; no pain or blood. Five months later he passed several more similar masses, and since then, has passed many such bodies. Lately has had more or less pain in lower half of abdomen but has kept on with his work. A cyst passed 3 weeks ago was submitted to microscopic examination and showed a thin laminated membrane containing clear fluid.

Examination. Spleen non-palpable. Liver not enlarged. No extraneous masses. Collargol injection of kidney pelvis normal.

Renal Function. Appearance time 13 minutes; 38 per cent. in 1 hour.

Echinococcus fixation test positive.

Operation, nephrectomy. Specimen consisted of an enlarged kidney and at one end a cyst the size of a small tangerine orange. On section, the kidney substance was almost entirely replaced with numerous small thin-walled cysts containing scolices of the echinococcus. Many of these cysts lay free in the kidney pelvis and upper part of the ureter. Convalescence uneventful.

April 22, complement fixation test negative.

Patient well and working.

CASE 20. *Echinococcus cyst of kidney.*

E. S. No. 196614. H. P. Female. Age 35. Greek.

Operated on by Dr. F. Cobb.

In the United States 7 years. Admitted to hospital July 24, 1914.

Fifteen years ago had an attack of pain in the upper left quadrant and noticed a small tumor at the same time, which has been slowly increasing in size. During the last two months pain in the left side has increased in intensity. Pain radiates to the pubic region and to the thigh. Vomiting the last two weeks. No jaundice. General weakness.

Examination. There is a large mass in the abdomen filling the whole left side. It extends from under the costal margin on the left to a point midway between the pubes and umbilicus. No edge or notch felt.

Blood examination. Hemoglobin 90 per cent.; reds 4,900,000; whites 13,000. Mononuclears 78 per cent.; basophiles 20 per cent.; eosinophiles 2 per cent.

Renal function normal.

X-ray negative.

Wassermann test negative.

Operation. Exploration showed tumor to be retroperitoneal and connected with the kidney. Incision closed. Incision made in flank. Large cyst attached to kidney ruptured with escape of large amount of fluid and many cysts. Nephrectomy. Uneventful convalescence.

Pathological Report. Echinococcus cyst of the kidney.

Echinococcus Fixation Test. Positive.

CASE 21. *Echinococcus cysts of liver and right kidney.*

E. S. No. 197628. Italian laborer. 34 years old. Married. Fourteen months in the United States.

Operated on by Dr. Lincoln Davis.

Admitted to the hospital September 12, 1914.

About a month ago was taken with sudden severe abdominal pain which compelled him to quit work. Pain localized in the upper quadrant. Since the first attack has never been free from pain, but not sick enough to be in bed; some fever, digestion disturbed. Severe attack of pain in the upper right section of the abdomen on the day of entrance, with a temperature of 102. Bile in urine.

Pre-operative diagnosis. Acute cholecystitis or high appendix.

Operation. Gall-bladder, duodenum and stomach not remarkable. Inflammatory mass felt in region of the right kidney. Abdominal incision closed.

Lumbar incision made, kidney a mere shell containing a large quantity of thin fluid and many cysts of all sizes. Incision enlarged, cavity explored with hand and found to lead up to the liver. Cavity irrigated, drained with gauze and tubes. Uneventful convalescence.

Wassermann test negative.

Echinococcus complement fixation test positive.

October 13, salvarsan 0.3 given.

Complement fixation test remains positive after salvarsan.

Present condition, good; working.

CASE 22. *Retroperitoneal echinococcus cyst.*

E. S. No. 200539. Italian laborer, D. C. Male. Age 44.

Operated on by Dr. Lincoln Davis.

Admitted to hospital February 27, 1915.

For four months has noticed a lump in the right lower quadrant. No pain. Some backache.

Examination. In the right lower quadrant of the abdomen is a large, hard mass filling the whole quadrant. Typical hydatid thrill elicited by heavy percussion over the tumor.

X-ray, negative.

First complement fixation test negative.

White count 10,800.

Operation. Incision through the border of the rectus. Large retroperitoneal tumor extending from under the ribs down to the pelvis and to the median line. An attempt was made to shell out the tumor; found to be impossible. Walling-off gauze placed and cyst opened. Large number of daughter cysts evacuated. Cavity extended under ribs in the region of the right kidney. Kidney could not be made out. A large portion of the anterior wall of the cyst was excised, its edges sutured to the peritoneum, and the cavity packed with gauze.

Convalescence uneventful except for considerable

post-operative temperature. Wound gradually closed.

Pathological report of specimen, echinococcus cyst.

Complement fixation test April 2, strongly positive.

Present condition good; patient working.

CASE 23. *Echinococcus cyst of liver.*

E. M. No. 204860.

J. E., Syrian laborer, age 34.

Operated on by Dr. D. F. Jones.

Admitted to hospital October 20, 1915.

One year ago had an attack of severe intermittent epigastric pain radiating to lumbar region. Attacks lasted for about an hour, and came every few hours for about two weeks. Feels nauseated, but does not vomit. Pain has no relation to eating. Two days ago had an attack lasting one hour. Has never noticed any jaundice up to now.

Examination shows liver dullness extending from 5th rib to 5 cm. below costal margin; edge felt. Spleen palpable. Moderate jaundice.

Echinococcus fixation test weakly positive.

Blood: 6,320,000 reds, 6700 whites. Differential count not significant. Coagulation time of blood, 5 minutes.

X-ray shows no evidence of gallstones, but a process involving the pylorus suggestive of malignant disease or specific.

October 25, 1915, operated on before the Clinical Congress of Surgeons.

Preoperative diagnosis, echinococcus cyst.

On the under surface of the liver there was a tumor, giving the characteristic thrill. Incision enlarged by a lateral cross-cut; walling-off gauze placed and cyst punctured, with the escape of a few daughter cysts. Cyst wall removed with forceps, leaving a cavity about the size of an apple. Tube drainage through stab-wound in flank. Considerable drainage containing bile-stained fluid.

November 20 discharged to Waverley Convalescent Home in good condition, with small sinus in the side.

Pathological report by Dr. W. F. Whitney; thick-walled cyst containing numerous small daughter cysts.

November 9, the echinococcus test was still strongly positive. Present condition good.

CASE 24. *Echinococcus cyst of liver.*

W. S. 204759.

Italian female, married, 44 years old.

Operated on by Dr. G. W. W. Brewster.

Admitted to hospital October 14, 1915.

Always well up to present illness. One year ago had severe pain in epigastrium, lasting several days. This pain radiated to the right shoulder. Six months ago had similar pain, and again 8 days ago. During each attack patient vomited and had fever. For the past 8 days has had pain every day; daily vomiting; jaundiced.

White count, 14,600. Differential count: polynuclears, 77%; small lymphocytes, 5%; large lymphocytes, 13%; mast cells, 5%.

Well developed and nourished. Eyes jaundiced. Abdominal examination shows extreme tenderness along costal border, otherwise negative. Patient had considerable pain the day after admission, requiring morphia.

Operation. Gall-bladder found distended. There was an irregular, cystic mass occupying much of

the liver substance. This was opened with the liberation of multitudes of small and large cysts, from the size of a pea to a golf ball. Foul-smelling, greenish material was evacuated from a deeper cyst. Cavity wiped clean; as much as possible of the lining removed; cavity packed with gauze. Gall-bladder rapidly removed. Considerable post-operative shock. Indirect transfusion for shock. Patient gradually failed and died on second day.

Pathological report of cyst removed: echinococcus cyst.

Autopsy No. 2511 showed evacuated echinococcus cyst of liver. Examination of removed gall-bladder showed nothing remarkable.

CASE 25. Echinococcus cysts of the liver and peritoneal cavity.

W. S., No. 193988.

Greek laborer, 22 years old.

Operated on by Dr. C. A. Porter.

Admitted to the hospital March 6, 1914.

As a child had attacks of pain in side, accompanied by fever. Seven years ago had pains in lower abdomen, lasting a week. Felt a lump in this region, which later disappeared. Two years ago had a similar attack and another lump in same area. Four and a half months ago had headache and noticed that he was yellow. Felt feverish. Nauseated at times. Felt fullness in epigastrium, and noticed a lump in this region. Jaundice lasted one month. Worked until two weeks ago, when he gave up on account of left-sided pain.

Well developed and nourished man. Mass felt in region of right kidney. Mass felt by rectum above prostate.

Preoperative diagnosis: hydatid tumor of liver.

Operation. Oblique incision from median line to lower rib margin, incising outer half of rectus muscle. A large cyst found involving right lobe of liver. Cyst also felt in pelvis, and left lobe of liver. Walling-off gauzes placed, cyst in right lobe opened, many small cysts evacuated. Sac marsupialized; packed with gauze.

March 29, secondary laparotomy, with removal of echinococcus cysts of sigmoid, rectum, gastro-hepatic omentum and great omentum. A large cyst in the left lobe of the liver and in the region of the spleen not touched. Wound closed without drainage. Good convalescence.

Discharge to Waverley with old wound still draining. No subsequent note.

Pathological report by Dr. W. F. Whitney: echinococcus cysts.

CASE 26. Echinococcus cyst of the brain.

Mass. General Hospital, No. 299062, Out Patient Department.

Italian laborer, age 24. In this country two years. Operated on by Dr. Harvey Cushing at the Peter Bent Brigham Hospital on December 4, 1913.

Positive findings: subjective, gradual loss of power of right arm for two months, loss of power of right leg for one month, paresthesia of right side of body and extremities, aphasia for past five days.

Objective: optic fundus: disc margin obliterated, disc region pale, lamina cribrosa and optic cup obscure, veins engorged and tortuous. Pupils unequal, right greater than left, both react to light and accommodation. Eyes slightly prominent. Definite right homonymous hemianopsia. Weakness of right facial muscles. Deep reflexes increased on right

motor aphasia complete. Memory evidently markedly disturbed; he seems disoriented. Disposition very irritable when aroused. No dizziness or vertigo. Ataxia in both legs; right foot not brought up well from floor.

Differential count: polymorphous neutrophiles, 74%; eosinophiles, 7%; small mononuclear, 10%; large mononuclear, 9%.

Wassermann: spinal fluid and blood tests negative. Lumbar puncture, 3 c.c. clear fluid; no increase in pressure; count, 9 cells per cubic m.m. Globulin negative.

X-ray of skull, negative.

Dec. 4, 1913. Exploration from presumed tumor of left hemisphere. Surface normal. Aspiration of brain, evacuation of clear cystic fluid. Brain incised; three parasitic cysts found and removed from left temporal lobe.

Dec. 10, 1913. Removal of bone flap size of a pigeon egg; great cerebral tension.

Feb. 13, 1914. Aspiration of cyst in left hemisphere; 38 c.c. fluid removed.

March 3, April 29 and May 18, 1914, explorations with removal of more fluid each time. Died, June 14, 1914.

Echinococcus complement-fixation test, March 13, 1914, positive.

Post-mortem findings: Echinococcus cyst of heart and pericardium, including auricular walls; cystic formation of the lumbar cord; bronchopneumonia; chronic otitis media.

CASE 27. Echinococcus cyst of liver.

Mass. General Hospital, O. P. D., No. 224741.

Italian blacksmith, 49 years old, married. In this country eight years.

Past History. Pneumonia 11 years ago; for the past 11 years has had periodic attacks of acute pain in gall-bladder region, at times accompanied by vomiting and jaundice.

Present Illness. Three days ago had acute pain in gall-bladder region, which lasted 2 days and was accompanied by vomiting.

Well developed and fairly nourished; abdomen showed a slight prominence at the gall-bladder region, which on palpation appeared to be a smooth, round, tender mass of about the size of an adult male fist. Otherwise the examination was negative.

Operation November 20, 1913, by Dr. R. P. Bonelli, in a private hospital. A cyst the size of a baseball, with a thickened capsule, was found springing from the inferior surface of the liver, mainly from the quadrate lobe. The encroachment of the cyst upon the gall-bladder and its ducts had probably caused the symptoms simulating gall-bladder disease. A needle was plunged into the cyst, and a clear, watery fluid aspirated. The diagnosis of hydatid disease was made, and later confirmed in the pathological findings. The cyst, along with the edge of the liver, which had been practically separated from the greater mass of the organ by the cyst, was removed *en masse*. Bleeding was controlled by catgut sutures going through the full breadth of the liver substance, and by warm salt solution. Considerable gastrohepatic fold, to which the cyst was adherent, had to be detached, causing a mechanical gastroptosis. This was remedied by suturing it back into place. Beneath the cyst, within the liver substance, was a cavity the size of a lime, which contained a necrotic membranous substance and a turbid serous fluid. This was thought to be a dis-

integrated hydatid cyst which had been dead and inactive for many years. The cavity was thoroughly swabbed, and the site of operation drained with rubber tubing. Outside of an unretentive stomach for the first 3 or 4 days, the patient made uninterrupted recovery, and on the 27th day was discharged in good condition, only requiring a protective dressing.

January 5 healing was complete. Patient in excellent condition.

CASE 28. *Echinococcus cyst of liver and omentum, and ruptured echinococcus cyst of lung.*

Service of R. I. Lee, No. 184560.

C. G.; male; age 27; married; Italian, in this country 15 years; fruit peddler.

Admitted to hospital Aug. 23, 1912, but refused to remain longer than one week.

Past History. In 1910 had a severe attack of pain in the epigastric region, centered at the ensiform. At this time first noticed a small swelling just below the ensiform. From then on, had similar attacks at irregular periods, depending on food taken, and accompanied by nausea and occasional vomiting. After 2 years the swelling had increased perceptibly and a feeling of fullness in the epigastric region, and shortness of breath on exertion developed.

Examination. Well developed and nourished; abdomen showed a prominence just below the ensiform, which moved with the liver on respiration. On palpation it was a smooth, doughy and tender mass, intimately connected with the liver. Liver dullness extended 3 fingers below the costal margin on the right side, and 4 fingers below the same margin on the left side, hinting towards the fact that the mass sprang mostly from the left lobe of that organ. The right side of the chest was dull from the inferior angle of the scapula down, and an occasional distant dry crackle was heard.

X-ray negative. Wassermann test negative.

Blood: 5200 white corpuscles; hemoglobin, 80%; coagulation time, 7 minutes. Stained specimen: polynuclears, 46%; lymphocytes, 51%; eosinophiles, 1%; transitional, 2%.

Diagnosis of echinococcus disease of the liver was made and operation suggested.

Operation Jan. 22, 1915, by R. P. Bonelli, in a private hospital. On opening the peritoneum, a huge cyst was seen to spring from the entire inferior surface of the liver. It was adherent to the stomach, omentum, transverse colon, kidneys and spleen, and the gall-bladder could not be located at all. A series of 4 exogenous cysts, ranging in size from a hen's egg to a walnut, had thoroughly freed themselves from the original cyst and were adherent to the omentum. Three other exogenous cysts were adherent to the original cyst itself. These were carefully freed and individually removed *en masse*. Most all contained living scolices. The left lobe of the liver had most all been destroyed, the cyst filling its space. The wound drained profusely a sero-mucous fluid mixed with bile.

January 26 and February 10, echinococcus fixation test strongly positive. Patient was discharged in good condition on Feb. 13. The sinus on the right seemed to communicate with the chest cavity, for when the patient coughed there was an expulsion of air through the sinus. During the rest of February and March, the patient had a dry cough and vesperal fever. Sputum was negative for tu-

berculosis. Examination showed consolidation of the middle and inferior lobes. Patient expectorated large quantities of mucus, some brick red, other prune juice appearance. Examination of it showed hooklets of disintegrated scolices, and diagnosis of hydatid cyst of the lung made. Cough and expectoration decreased and disappeared in June. The sinus was completely healed in May. The patient felt fine.

Echinococcus fixation test Dec. 7, 1915, negative. Patient well and working at present.

CASE 29. *Echinococcus cyst of liver.*

E. M. and E. S., No. 210334.

Albanian, age 28, married; comber in worsted mill; in the United States three years; male.

Operated on by Dr. F. G. Balch.

Admitted to hospital Sept. 5, 1916; discharged Oct. 11, 1916.

Past History. Born in Albania; lived there all his life until three years ago. Since boyhood employed on a farm as herder of sheep and cattle. Four years ago suffered from a slight pain in right lower chest when lying on that side. This lasted about one year. About one and one-half years ago, had attacks of pain about every two weeks in right hypochondrium after hard work. Pain lasted 5 to 10 minutes, relieved by rest.

Present Illness. Above condition continued until five months ago, when attacks came every 2 or 3 days, lasting 2 to 15 minutes. About same time swelling in right hypochondrium was noticed. Was then as large as now. Pain not severe, relieved by rest, but sharply localized and interferes with work. Has no relation to meals, and stays in same spot.

Physical Examination. Well developed and nourished. Heart and lungs normal. Mass in right upper quadrant, extending to level of umbilicus. Edge rounded, smooth and deep in abdominal cavity. Moves freely with respiration. No spasm, tenderness or other masses. Liver dullness from 4th space to 13 cm. below costal margin in right mammary line. Edge palpable, surface firm and has several large rounded nodules, only slightly tender to palpation. Spleen and kidney not felt.

Blood: Sept. 6, white count, 5000; hemoglobin, 80%. Smears Sept. 5 and 9 show neutrophiles, 62 and 58%; small lymphocytes, 25 and 39%; large lymphocytes, 10 and 9%; mast cells, 2%; transitionals, 1%; eosinophiles, 2%; reds and platelets, o.k.; slight achromia. Sept. 7, Wassermann and echinococcus fixation tests negative.

X-ray No. 27640: Gall-bladder negative. Outline of left kidney distinctly seen, right not made out. Diaphragm high on right with limited downward excursion. Shadow of liver large, edge not distinct, marked tenderness over liver.

Diagnosis: echinococcus cyst of liver.

Operation. Sept. 12. Epigastric incision through right rectus muscle exposed large right hypochondrial fluctuant retroperitoneal tumor size of football, with sharp thin liver edge moving up and down over upper portion with each respiration. Rest of abdominal organs normal. Tumor tapped, one gallon of clear, colorless fluid removed. No daughter cysts. Cyst opened and explored, no contents found save a thick whitish translucent lining membrane with characteristic laminated structure of its outer layer. This removed with no resistance. The fibrous capsule of the cyst then cut down until normal kidney reached, proving cyst to be of upper

pole of right kidney. Kidney apparently all right. Wicks into kidney and peritoneal cavity at gall-bladder region.

Pathological report, Sept. 12, Dr. H. F. Hartwell: echinococcus of kidney. Blood: Sept. 13, white count, 5800; Sept. 22, 17,200; Sept. 28, 9200; Sept. 19, echinococcus fixation test negative.

Convalescence uneventful except for elevation of temperature without apparent cause.

Discharged relieved on Oct. 11, 1916.

STATISTICAL SUMMARY.

In these 29 cases of echinococcus disease at the Massachusetts General Hospital, the cysts were located in the liver alone in 16; in 5 cases other parts as well as the liver were involved, namely, peritoneal cavity twice, omentum, lung and kidney once each. In the other 8 cases the cysts were found in the brain, heart and pericardium once, kidney twice, peritoneum once, gastrohepatic omentum once, and retroperitoneal twice. In one case echinococcus cysts were passed in the feces, in another with the urine. Twenty cases were discharged relieved, one unrelieved and seven dead; operative mortality, 25%, six post mortems were performed. The ages of the patients ranged from 19 to 52 years, the average age being 32½ years. Twenty-two were males, fourteen of whom were laborers; the rest were peddlers, seamen, carpenters, farmers, blacksmiths and weavers. Eleven were Italian, 6 Greek, 3 Armenian, 2 Russian, 2 Irish, 1 Swede, 1 Iclander, 1 German, 1 English and 1 Albanian.

The first case recorded at this hospital was in 1875, the second case was in 1891. There were six cases in all prior to 1900 and 23 since then. There were 8 operative cases in the years 1914 and 1915. The increase of late years is significant.

LITERATURE.

- ¹ Barnett, E. L.: Some Observations on Hydatid Disease. *New Zealand Medical Journal*, 1914-1915, Vol. xiii, pp. 145-158.
- ² Blanchard, R.: *Traité de Zoologie Médicale*, 1889, Vol. i, p. 441.
- ³ Cavenagh, W. R.: Notes on the Life History of a Hydatid Cyst. *Australian Medical Gaz.*, 1910, No. 29, p. 28.
- ⁴ Cervetto: Dell'Echinococco nell'età infantile. Vol. viii, Padova, 1889.
- ⁵ Chelini, A.: Cinque casi di cisti di echinococco polmonare. *Gazz. Osp. e Clin.*, Milano, 1914, No. 70, pp. 737-741.
- ⁶ Cleland and Couston: Hydatid Disease in Western Australia. *Jour. Tropical Med. and Hygiene*, 1908, Vol. xi, No. 11, p. 168.
- ⁷ Cusani, G.: Cenni statistici e cronologici sull'echinococco dell'uomo in Italia. *Museo Zoologico della R. Università di Genova*, 1891 (reprint).
- ⁸ Dévé et Payenneville: Greffe Hydatide et Neo Salvarsan. *Mémoires de la Société de Biologie*, 1914, Vol. lxxvi, p. 648.
- ⁹ Frieburger and Fröhner: Veterinary Pathology, Vol. i, pp. 291-297.
- ¹⁰ Ghislini, A.: Ricerche sul siero di sangue di individuo affetto da cisti da echinococco e sul liquido in essa contenuto. *Gazz. degli Osp. e Clin.*, Dec. 1906, No. 153, pp. 1610-1617.
- ¹¹ Ghislini, A.: Il valore della sieroreazione basata sulla fissazione del complemento. *Annali del Instituto Maragliano*, May, 1909, Vol. lii, fasc. 3, pp. 161-172.
- ¹² Henry, Charles K. P.: Hydatid Disease—Report of Twelve Cases from the Montreal General Hospital. *Montreal Med. Jour.*, 1906, No. 35, pp. 92-100.
- ¹³ Howard, William Lee: An explanation of the cause of the prevalence of echinococcus hominis in Iceland. *Mayland Med. Jour.*, April, 1892, Vol. xvi, No. 2.
- ¹⁴ Kolbe: Sterilisation intraveineuse du Kyste Hydatide par l'arsenic benzoé ou ses similaires. *Le Mouvement Médical*, May, 1914, Vol. 5, Tome 11, p. 146.
- ¹⁵ Kremer, E.: Die serologische der menschlichen Echinococcus infection. *Ergebnisse der Chir. und Orthopädie*, 1912, p. 183.
- ¹⁶ Lyon, Irving P.: Echinococcus Disease in North America. *Collected Cases to July 1, 1901. American Jour. Med. Sci.*, 1902, Vol. cxliii, pp. 124-141.

- ¹⁷ Magnuson, G.: Two Hundred and Fourteen Echinococcus Operations. *Archiv. f. Klin. Chir.*, 1912, Vol. c, p. 293.
- ¹⁸ McDonald, Gordon: Hydatid Disease in New Zealand. *New Zealand Med. Jour.*, 1888-1889, Vol. ii, pp. 80-89, 142-150.
- ¹⁹ McKennie, R. S.: Incidence of Echinococcus Disease in British Columbia. *Northwest Medicine*, Jan., 1910, Vol. xi, No. 1, pp. 6-9.
- ²⁰ Martin: Echinococcus in the Domesticated Animals. *Jour. Comp. Path. and Therap.*, Edinburgh and London, 1907, Vol. xx, pp. 305-324.
- ²¹ Memmi, G.: Leocociti eosinofili nelle cisti da echinococco. *Revista Medica del Uruguay*, Dec., 1913, Anno xvi, No. 12.
- ²² Parez: Thèse de Montpellier, 1905.—Contribution de l'étude de l'intoxication hydatide.
- ²³ Posselt: Die Stellung des Alveolarchinococcus. *Münch. med. Woch.*, 1906, No. xii.
- ²⁴ Prat, Domingo: Los quistes hidatícos en el Uruguay, 1908-1912. *Revista Medica del Uruguay*, Dec., 1913, Anno xvi, No. 12.
- ²⁵ Rimedi, V.: Contributo alla Chirurgia dell'Echinococco ed elle sue localizzazioni rare Cogliari, 1906.
- ²⁶ Richardson, M. H.: A Case Report of Echinococcus Disease. *BOSTON MEDICAL AND SURGICAL JOURNAL*, April 28, 1892.
- ²⁷ Stone, A. K.: A Case Report of Echinococcus Disease. *BOSTON MEDICAL AND SURGICAL JOURNAL*, Sept. 3, 1903.
- ²⁸ Vegas and Crouzet: Le Kyste Hydatique et leur Traitement dans la République Argentine. (Report of 952 cases). *Revue de Chirurgie*, 1901, Vol. xxiii, pp. 469-478.
- ²⁹ Verdet, Louis: A propos de quelques cas de kystes hydatiques chez l'adulte. *Gaz. hebdom. d. Sc. Méd. de Bordeaux*, 1913, xxvii, pp. 207-781.
- ³⁰ Watson, A.: Hydatid Disease in Australia. *Surg., Gynec. and Obstet.*, 1907, Vol. iv, pp. 759-781.
- ³¹ Weidner zur Kenntnis und Kasistik der Echinokokkenkrankheit. *Beiträge zur Klinischen Chirurgie*, Tübingen, 1912-1913, Vol. lxxxiii, p. 435.
- ³² Zappaloni: La prova di Bordet-Gengou nella infezione echinococcica nell'uomo. *Il Policlinico*, sec. Chirurg., Agosto-Nov., 1915.

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MENTAL STATES RESPONSIBLE FOR MALINGERING.*

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In a general way, malingering is a deliberate attempt to shirk or deceive by pretending illness or inability, and should not be confused with the unconscious deceptions more or less frequently observed among intelligent and well-meaning people.

The importance of its detection or elimination may be far-reaching, involving either nominal damages or escape from a just retribution. As a rule, malingering presupposes an underlying motive which is more or less apparent, and should be looked for and considered in all suspected cases. The existence of a motive, however, has only an indirect bearing on the diagnosis, and is of far less value than a full personal and family history. It is only one point in a picture which must be viewed as a whole and from every angle.

The criminal, or one charged with crime, simulates disease or insanity to avoid the irksome restraint of the prison, or as a further means to

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accomplish an escape; the supposed victim of an automobile or railroad accident simulates for the purpose of winning damages, obtaining something for nothing; the hysterical girl simulates to attract attention and to gain sympathy.

Many attempts at feigning insanity, disease or injury are crude, and at once recognized, or at least suspected, while others are exceedingly clever and may hoodwink even the most experienced. This is especially so in cases simulating insanity among a population recruited largely from the prisons, and made up of individuals experienced in the ways of crookedness and oftentimes possessing a first-hand knowledge of some of the more common characteristics of mental disease. A host of offenders have as a fundamental basis of their moral obliquity a mental makeup deviating from that which we assume to call normal, variously estimated from 10% to 90%. It is probable, however, that the number may be approximated at 20 to 30%.

Feeble-mindedness is only a relative term, after all. The line of demarcation between the feeble-minded and those of us who assume intelligence, between responsibility and irresponsibility, is not sharply drawn, more particularly from the medical rather than the legal point of view. There is no real criterion. The diagnosis of feeble-mindedness, insanity, and the estimation of responsibility is more or less a matter of judgment, and opinions frequently differ. The several mental tests for intellectual development are of value up to a certain point, more particularly among juveniles. Among adults, however, there are factors demanding consideration other than the rating obtained by any of the recognized scales of measurement.

The family history, early training and environment, the worldly wisdom gained by experience, the ability to fit as an average peg in the social machine, are all phases of mental development, and not always measured by any of the recognized psychological tests. A man may rate 10 years of age by the Binet scale, yet hold an engineer's license, or serve several enlistments in the navy. Others may obtain an adult rating by the various mental tests, yet are lacking that balance or mental poise which places the average individual on a par with the rank and file of society, or enables him to keep out of trouble.

Malingering, or feigning of disease or injury, as seen in prison and hospital service, has varied from the most common complaint, the lame back or eye strain induced by weeding onions, to locomotor ataxia and deep dementia. The skill with which the deception is carried out varies with the intelligence and persistency of the individual. The detection of fraud in accident cases or simulated physical disease may or may not be easy. Much depends on the opportunity for observation and the relation of subjective symptoms to the conditions found by careful physical examination. A grave injury to the

spine is inconsistent with unimpaired mobility of the spinal column, normal reflexes, proper functioning of other organs, unimpaired sensation or sensation disturbed in areas not corresponding to the seat of the alleged injury. Yet it is possible that any or all of these symptoms may be simulated for a time, and if there is a doubt or a difference of medical opinion, a jury may be inclined to believe the complainant, especially if the defendant happens to be a corporation or to possess a bank account. On the other hand, the layman is more inclined to believe an insane person charged with a capital crime is malingering than to accept a diagnosis of sanity.

The supposed motive to deceive may overshadow the more or less patent evidence of a real condition. Even the medical expert may be misled if he fails to consider carefully every phase and to weigh each bit of evidence without prejudice. A well-marked case of dementia precox charged with crime is readily recognized by the alienist. It is not so easy to recognize the border line or incipient case. He may be diagnosed as mentally sound or a malingeringer, and later show by his conduct in prison that he was beyond doubt either feeble-minded or insane from the beginning, and should not have been stigmatized as a malingeringer or criminal. On the other hand, the malingeringer may succeed in his deception, thereby evading the dispensation of justice.

The simulation of disease and various forms of inability among a prison population has been observed invariably in those of sub-standard development or intellectually damaged. The motive has varied from a natural antipathy for honest labor to a fear of the electric chair, and there has been as wide a variation in the estimated degree of responsibility.

In some of the border-line cases there have been several periods of residence in the hospital and prison before the mental status was definitely settled. No two men react exactly alike under confinement in prison or hospital. A normal individual will adapt himself to either environment; another may appear normal under hospital conditions and yet be unable to adjust himself to the sterner life of the prison. Something is lacking. The prison officer will tell you that "he is not all there." These people are poorly balanced, lack resistance and consequently react badly to prison discipline. They become seclusive, suspicious, depressed and perhaps deluded, and are proper subjects for hospital care. These cases may clear up within a day or two of hospital treatment, yet they are true cases of mental aberration and not malingerers.

Another group, possessing to a lesser degree the same general characteristics with a sub-standard intellectual equipment, feign insanity for the easier life of the hospital, and frequently carry their point for a time. The general reac-

tions and conduct, however, are entirely different.

The first group as a rule presents an emotional tone and mood, conduct, powers of attention, judgment, reasoning, association of ideas and flow of language in accord with the content of their distorted imagination. The other group either overact the part or forget themselves in an unguarded moment, and finally admit the deception. It is then necessary to decide how far such a case shall be held responsible. Is the degree of mental defect still sufficient properly to classify in the hospital, or is it a case for the prison?

There is still another large class on the border line, neither insane nor feeble-minded in the ordinary sense, as judged by our present knowledge. They are anti-social, erratic, easily upset, impulsive, quarrelsome, lacking inhibition, easily led and influenced. They get into trouble, are detected, repent, take their punishment, and then forget or fail to profit by their experience. They may be exceedingly troublesome or, on the contrary, may adapt themselves to conditions in such a way as eventually to win a release. They do not hesitate to revile or bring false charges, and oftentimes in the most plausible manner. They are swindlers and liars, unstable and unreliable. Under whatever term they are designated, they are abnormal, social misfits; apparently something is lacking which the intelligence tests fail to reveal.

Pure malingering, the feigning of insanity without a psychopathic basis, is in our experience extremely rare. In fact, we have always felt that there was something the matter, whether or not we have been able to demonstrate a definite and tangible intellectual defect.

The following cases may be of interest as illustrating the more common types:

CASE T. A prisoner serving a term for drunkenness was observed by the officer to reel and stagger on his way to work. He complained of weakness of the legs and inability to walk because of vertigo. At first sight his gait somewhat resembled that of tabes, but it was noted that there was a fairly regular rhythm to the apparent incoordination. The pupils reacted to light and accommodation. The deep and superficial reflexes were undisturbed, and there was no Romberg symptom. Sensation intact, and no evidence of any paralysis. Inquiry revealed the fact that his trouble was worse when he was detailed for manual labor, and that he had been seen walking without difficulty. He was charged with faking. He was very earnest in his protestations of disability, and threatened to take his case higher up. On leaving the room he nearly fell down, but on reaching the stairs recovered himself, and, unaware of observation, walked down without the aid of a cane or the handrail. He had been an institution rounder for years, and without doubt had seen various types of nervous diseases and had observed, from his point of view, their easy life. He was a chronic alcoholic and, while not insane, presented the characteristic mental and emotional dilapidation of the drunkard.

Such a case might well collide with an automo-

bile, and if directed by a clever lawyer, cause considerable trouble in the courts. The subsequent history has substantiated the diagnosis which, with sufficient opportunity for observation, was comparatively easy.

CASE C. J. A. Age 27; admitted Nov. 1, 1914; crime, carrying a revolver.

Medical certificate: "Statements mixed, appearance that of mental defective, behavior stupid. Becomes violent, has attempted suicide. Was inmate of Dannemora. Has physical marks of brain disease." Past history from patient: Ten years ago was in Central Islip Hospital. Diagnosis reported from this hospital, psychoneurosis, hysterical type. Discharged recovered. Committed to Dannemora State Hospital from Auburn Prison, October, 1913, and discharged October, 1914. Dannemora diagnosis, dementia precox. Believed to have delusions and hallucinations.

On admission to Bridgewater his general attitude was not in accord with the description in the medical certificate. He admitted having trouble all his life. Had served in several prisons. Shortly after admission, he admitted the deception, as he feared extradition on another charge. He was sent to New York, January 19, 1915. He later returned to Massachusetts and was sentenced to the State Farm prison for vagrancy. Shortly after admission he became seclusive, sullen and a loafer. One day he presented an abrasion the size of a quarter on the back of his hand as a reason for an excuse from work, claiming he had received it in a fit the night before. He finally admitted that he had abraded his hand to avoid work, and that a threat of suicide was a bluff. He was told rather emphatically that if he continued such conduct he would be committed as insane, and that a second commitment would mean a much longer time than the sentence he was serving. There was a right-about-face. From that day on he became a good worker, obedient, pleasant, and the question of insanity or physical inability was never again raised.

The past history of this patient shows him to have been unstable and anti-social from boyhood. The diagnosis of psychoneurosis at the age of 17 may have been correct; that of dementia precox, in view of his subsequent conduct, was probably wrong. Mental age by Binet scale, 11.6, and by the Yerkes point scale 15. Although defective to a degree, he was wise beyond the years indicated by the mental tests, and possessing a first-hand knowledge of some of the gross symptoms of insanity, he has been able to deceive, and choose for himself between prison and hospital.

CASE G. N. Age 21. Committed to the hospital August 24, 1911, from the jail, where he was awaiting trial for breaking and entering.

Medical certificate: "Muscular tremor, made an attempt at suicide, talks only to imaginary persons. Mutters to himself and seems to have delusions and hallucinations."

On admission to the hospital was nervous and disinclined to talk. Later admitted hallucinations at the jail, but had insight regarding them. Thought they were due to his morphine habit.

Discharged in six weeks, not insane; condition attributed to morphine. Second admission to the hospital August 13, 1913, from the Reformatory; discharged October 2, 1913.

Medical certificate states that he stopped work, complained of headache and inability to apply himself. He was silent, self-absorbed and answered questions with difficulty. Said other inmates were calling him names, that he had a fight with one, and that a prisoner ran after him with a knife. On admission, there was nothing in his general conduct or physical examination suggesting the emotional state or the delusions mentioned in the medical certificate.

He finally admitted the deception, and that he preferred hospital conditions to the restraint of the Reformatory.

Possessing a knowledge of the gross manifestations of insanity obtained during his previous commitment, for a short time he was able to act the part.

Although rating sub-standard by the Binet test, his knowledge and wisdom of the world were far beyond that of the average child of corresponding age, and he should not be judged on that basis. His subsequent history substantiates the diagnosis.

CASE S. Age 27, single. First committed to Bridgewater in 1901, at the age of 17, from the Concord Reformatory.

The medical certificate at that time stated that he believed eminent men in the state appeared to him at night and threatened him with false charges, that he was a graduate of Harvard, that he had killed two Chinamen who appeared at night, and that he threatened to kill an officer. While in the hospital he was exceedingly troublesome for several months and made several attempts to escape, in one of which he locked an attendant in his room, but was later captured.

Second admission to Bridgewater from State Prison September, 1912, where he was serving a sentence for breaking and entering. At the prison was a constant agitator, and was twice under observation as to his sanity. The medical certificate described him as tense, excitable, quarrelsome, and that he complained of the hostility of the officers, and that he was a victim of continual abuse because of his religious faith. On admission to the hospital he claimed he was "framed up" and that he had knowledge of morphine traffic in prison which would implicate many higher up. He made many absurd charges against the warden and chaplain, and claimed there was a conspiracy against him. He was an exceedingly troublesome patient—uneasy, abusive and threatening. He made an unsuccessful attempt to escape. Shortly before the expiration of his sentence there was a complete change in his general attitude and behavior. He became an exponent of law and order. He talked rationally concerning the conditions at the prison and admitted that his charges were based on gossip and that he never believed them. He was able to give in substance everything he had ever said or done, and his general attitude was not suggestive of one concealing delusions. He was held for several months over his sentence for observation, during which time his conduct was perfect. He was finally released to the care of his mother for a trial visit.

This man is not insane or feeble-minded in the ordinary sense. He is, however, unreliable, impulsive, erratic, vehement, inhibitionless and violent, and believes the world owes him a living. He has failed to profit by experience in the past, and will probably fail in the future. He was a malingerer

and a psychopath. Whether or not he should be permanently segregated, the future must decide.

CASE W. F. Age 39; single; colored; considerably above the average intellectually. Studied law and later theology. Sentenced to state prison April 15, 1915, five to six years. Crime, assault with intent to murder; committed to Bridgewater April 26, 1915.

The medical certificate states that for 12 years he had been hounded by the police, that he had been followed all over the country, and that they had gone so far as to introduce an anesthetic under the door of his room. He had heard people talking about him at night and other people remonstrating and begging them to let him alone. He claimed that after his arrest he was most brutally and indecently assaulted in the presence of women and children. The landlady, with whom he had lived for four weeks, states that she considered him queer, and that he thought detectives were after him, and that she was in league with them. He accused her of harboring these people in order that they might chloroform and dope him. March 12, 1915, he broke the door of his room down, which had been locked for non-payment of rent. On the arrival of the police, with no warning whatever he made a vicious attack with a dangerous weapon.

In this case the motive to mangle overshadowed in the minds of the jail officials the evidence of mental disease. His past history, which should have cleared any existing fog, if considered at all, was entirely ignored, and he was stigmatized as a felon. He was diagnosed at the hospital as a case of dementia precox of about 12 years' duration.

A diagnosis of physical disease is based on subjective symptoms and the relation they bear to physical and laboratory findings. We expect to find characteristic symptom groups either confirmed or consistent with the objective signs of disease. The same holds true in a general way as regards mental disease. Subjectively, the patient has certain ideas or false sensory impressions which affect or influence his conduct, emotional tone, judgment, will power; in fact, his whole existence is modified by the mental turmoil.

As in physical disease, the various forms of insanity present more or less characteristic modes of onset and development; symptoms characteristic of several years' duration are not expected in cases of a few weeks' standing.

Objective signs are expected to be more or less in accord with the content of thought. The emotional life of a dement is dead, while that of one in communication with the Deity may be of exhilaration or depression. It is most difficult for the malingerer to act these parts for any length of time when unaware of observation. Either he fails to maintain the proper balance, or discovers that a continuation will profit him nothing. An apparently depressed, moody or self-absorbed attitude during an examination is not in accord with that observed a few moments later when among other patients, or with that maintained during a ball game. Sooner or later he becomes confidential with an employee

or another patient who, acting without suggestion, may give the first clue. Sham being suspected, it is, then, a matter of long-continued observation and possibly several periods of hospital residence before the mental status can be definitely determined.

A diagnosis of malingering should not be made until all reasonable doubt of insanity has been eliminated. Even then the underlying condition must be studied for proper classification. The constitutional defect may be of sufficient degree to classify in the hospital, or there may be a definite psychosis in the background.

The importance from the legal, social and medical points of view is equally great. To mistake a genuine psychosis for shamming is an injustice, and might happen to any of us. Although comparatively few mistakes are made by the experienced observer, the fact remains that the determination of the true mental status is oftentimes extremely difficult, particularly in criminal cases, and that judgment is not infrequently passed by those lacking qualifications and training.

I feel that in all instances of doubt, commitment to a hospital for the determination of the insanity, as provided for by statute, is most essential, not only for the protection of those truly insane, but for the elimination, if possible, of the malingerer, and incidentally for a study of the defect which is the fundamental basis of the deception. The latter may be of sufficient degree to absolve even the malingerer from being stigmatized a criminal.

TRAUMATIC INJURIES OF THE KIDNEYS.

BY FRANK WARNER, M.D., F.A.C.S., COLUMBUS, OHIO.

A young man, twenty-five years of age, was thrown against a cooking range at the time of a derailment of a rapidly-moving passenger train. In alighting, his back, in the region of the right kidney, struck the range. No special soreness resulted from the fall, but the next day he noticed blood in the urine. This was perceptible only for the one day, and then only in small amount. The following day he consulted me, but stated there was no longer any blood came away with the urine; however, an examination revealed, through the microscope, a small amount of blood present, and a little more than a trace of albumen in the urine. This condition of affairs continued for one week, when the trouble gradually subsided, having entirely disappeared at the end of ten days. Rest was the only treatment employed.

From the fact that the trouble so quickly subsided, one would be led to believe that nothing more than a contusion of the right kidney had occurred. None of the severer symptoms that go with more serious injuries of the kidneys was present.

Even these slight contusions of the kidneys must not be too lightly regarded. Murphy has pointed out the fact that any bruised tissue

frequently becomes a prey to infective germs of one type and another. So, one needs a little time following these injuries to say with positiveness that no ill results will follow.

The purpose of the report of this mild case of traumatic hematuria is to call attention to the fact that slight contusions of the kidneys may escape observation unless care is exercised to diagnose them. It is not improbable that some of the injuries that are regarded as contusions of the muscles of the back have extended beneath the muscle walls to the kidneys themselves. While rest is valuable treatment for contusions of the muscles of the back, it becomes doubly important when the kidneys themselves are involved in the injured tissue. Besides, the complications which may subsequently arise, even in slight injuries to these organs, it behooves us to be alert and not overlook the true pathology which exists. This can be done if one will take the trouble to examine the urine, in addition to the back, at the seat of the contusion. Not until then can the diagnosis be correctly made nor the prognosis satisfactorily given.

Injuries to the kidneys are quite as apt to result where the violence has been sustained by the abdomen rather than the back.

What seems to be a slight contusion of the kidney at the time of the accident, may turn out to be a severe laceration of the renal tissue. Even after a severe injury to these organs, blood may not appear in the urine, for the time at least, owing to the fact that the ureter has been blocked by a clot of blood. Generally, however, this clot is soon passed down the ureter, frequently with the pain of a calculus moving in this tube. But there are other symptoms that point to the seriousness of the injury, and the situation of the blow received will indicate the probable organ involved.

All grades of injury occur to the kidneys as the result of accidents, from the mildest contusions to the severest lacerations.

It usually requires a very considerable force to injure the kidneys, owing to their protected position, situated as they are beneath the ribs.

Injuries of the kidneys that result from external blows, usually depend upon falls from a height, striking upon the back or abdomen, weights falling upon the patient, kicks of a horse, the ball of switch stand striking one on a moving train, crowding an individual between rigid moving bodies, as a train and platform; or, being struck by a pole of a wagon, hit by a base ball, etc.

If only a contusion of the kidney or kidneys results from the violence, a slight hematuria, without other symptoms, as in the case here related, may be the sole proof that injury has been sustained. Generally, however, pain in the lumbar region will be associated with the hematuria. Laceration of the kidney substance will

however, give more pronounced symptoms, depending upon the extent of the laceration in part, and the amount of associated injury. If excessive hemorrhage is present, it will soon lead to unmistakable symptoms, frequently producing collapse, in addition to the other usual symptoms of concealed hemorrhage.

Shock is a prominent associate of severe kidney injuries, as might well be expected, for the severer kidney injuries have been inflicted by a force that has only partly expended itself on these organs, consequently other complicating injuries are present which adds to the shock of the kidney injury.

Anuria is frequently associated with the severer injuries of these organs.

Just as injuries of any part of the abdominal cavity give rise to nausea and vomiting, so here similar symptoms are present in lacerations of the renal substance.

Anywhere from a few days to a few weeks following the receipt of the injury, an elevated temperature, leucocytosis, and the presence of septic symptoms in general may announce the infection of the lacerated kidney. This frequently calls for prompt nephrectomy, just as a severe laceration of the organ may demand similar treatment.

In the milder cases of kidney injuries, rest is the sole treatment needed. Where they are more decisive, the entire situation must be canvassed, for an exploratory incision may be demanded to deal with the injured organ as necessity seems to dictate. It may be found that controlling hemorrhage and suturing the capsule will prove all that is necessary, but, on the contrary, one may find an amount of laceration of the kidney substance which demands a nephrectomy be done.

While contusions and superficial lacerations usually recover, the severer lacerations tend in the direction of death, either from hemorrhage or peritonitis, unless a nephrectomy is undertaken early enough to circumvent this untoward event. Even without operation, however, recoveries have taken place after the most extensive lacerations.

If a fatal result does not follow the shock of the injury, hemorrhage, or peritonitis, a later line of dangers comes along to complicate the prognosis. Septicemia, toxemia, urinary extravasation, cystitis, multiple renal or perirenal abscesses, etc., may arise to produce death unless measures are instituted to prevent it.

In an analysis of 67 collected cases of deaths resulting from traumatic injuries of the kidneys, Morris found 30 deaths due to hemorrhage and 27 to suppurative or subsequent infection. (Morris, vol. i, p. 179).

Kidney lacerations and contusions are often associated with other injuries, as might well be expected from the amount of force that is frequently expended on the patient receiving them.

Fracture of the neighboring ribs, with a fragment jabbing into the kidney, a fractured spine, or rupture of the liver and perhaps some other abdominal organ, is a not uncommon occurrence in these injuries. Such complications were present in twelve out of seventeen deaths from kidney lacerations collected by Keen. (Vol. iv, p. 214).

In looking over the literature, it is evident that no one surgeon sees many cases of severe injuries of the kidneys. Out of 7741 injuries of all types, Kuster, in his clinics at Basel and Berlin, only encountered ten cases of lacerated kidneys. Of 2610 autopsies, he found 13 injuries of the kidneys, one a penetrating wound. Three of these cases were evidently encountered after death, as they are not included in the cases of injuries treated or diagnosed in his clinic.

Kuster showed, experimentally, that many lacerations of the kidneys were the result of hydrostatic pressure.

Ransahoff quotes Delbert's collected statistics of 319 cases in which 225 were not operated upon, with 103 deaths. Fifty cases treated by suture, packing, or partial nephrectomy, 2 deaths occurred. In Watson's 273 collected cases unoperated upon, 81 died. In 93 cases treated by conservative operations, 7 died. In 115 nephrectomies, 25 died.

Connell reports five cases of kidney laceration operated upon by him, four of a mild subperietal type and one severe. The four mild cases recovered; the severe injury was not operated on until ten days after the receipt of the injury, and the patient died.

To know when to operate on an injured kidney is always a difficult, and frequently uncertain, matter. But Keen has shown that only half the danger exists in operating on the kidney early, that obtains later in the history of the injury. When a hematuria continues, a hematoma forms in the region of the kidney, and if it seems to be increasing in size, together with symptoms of concealed hemorrhage, it is far better to operate then, under good conditions, than wait until the risk is greatly increased. Even if the hematoma spoken of does not appear, the hemorrhage that is taking place may be dissecting up tissues for a considerable distance, when the evidence of concealed hemorrhage must take the place of evidence of a hematoma. To wait too long only makes the prognosis more grave. Under modern aseptic precautions the danger of an exploratory operation on the kidney is not great if it is undertaken before too extensive hemorrhage has occurred or septic infection has taken place.

REFERENCES.

- Morris, Henry, F.R.C.S.: *Surgical Diseases of the Kidney*.
 Keen's Surgery, Vol. IV.
 Chetwood: *The Practice of Urology*.
 Guiteras: *Urology*.
 Murray, John B.: *Clinics*.
 Jacobson and Steward: *The Operations of Surgery*.
 Connell, F., Gregory, M.D.: *Surg., Gyn., and Obst.*, June, 1916.

OBSERVATIONS ON MEASLES.

By D. M. LEWIS, M.D., NEW HAVEN, CONN.,

Epidemiologist, New Haven Board of Health.

At the present time it is generally held that the only control over measles lies in the isolation of each case during the period preceding the eruption, namely, during the head cold period. Unless measles is epidemic, a diagnosis or probable diagnosis will be made but rarely during this period when contact exposure is assumed to be greatest, and for that reason control over measles is frequently held to be impracticable. Again, even Metropolitan Boards of Health are sponsors for the non-infectiousness of convalescent measles to the extent that after the disappearance of the rash, school children may be returned by certificates dated ahead or from the certificate of the attending physician. My previous field studies on diphtheria and scarlet fever showed that control over these diseases meant control over convalescent carriers and the self-inoculated carrier who had never had the disease. With a demonstrable control over those diseases, I have studied a series of cases of measles during a prevailing epidemic to learn why analogous procedures to those I have found in the other diseases should not hold in measles, or why present-day procedures do not control the disease.

In that measles is notoriously a poorly reported disease, my measures for obtaining every possible case occurring were the following: As with the other major communicable diseases, I made it a rule that all children in houses where there was a case must obtain a school certificate, which gave me unreported cases in other families, as well as some observation of possible carriers. Secondly, my system of absentees from school, as described previously by me, gave me possible unreported cases or missed cases. Lastly, requiring my certificate for admission to school after the disease, as against that of the attending physician, gave me unreported cases, as well as observations on the cases when well. That I obtained data on practically all cases occurring seems probable in that the usual 2% mortality recorded as low is expressed in the present epidemic as 1%.

My observations were made on 287 primary cases and 49 secondary cases occurring in 239 families from the time the premises were placarded until the card was removed. Of these cases, 73 primary cases were not reported. My rules called for notification to the board of health by the householder when, any time after ten days to two weeks, their physician, or failing employment of one, they considered the patients well. Until the card was removed, the other members of the family, especially children, should not come in contact with those previously sick. That such new stuff did not go even with intelligent individuals, was evidenced by the in-

frequency with which we met with instructions carried out, but rather with the frequency with which the one previously ill was not on the premises when I was notified that they were well. This was especially fortunate for gaining observations, in that of the 49 secondary cases, 25 had an incubation period of ten, eleven or twelve days regularly, while 24 had an incubation period of from eighteen to twenty-one days. That these latter cases were not exposures during the head cold period of the primary case was apparent by both the incubation period, and the fact that the one previously sick had been declared well after the first few days, coupled with the fact that the secondary cases were younger children of the family in neighborhoods where all the primary and missed cases were of the same school age. The points that confirm the presumption that these primary cases were carriers of convalescence are the following: forty-three of these cases were held in isolation for one week beyond the usual two-week period before the tongue had assumed a normal appearance, as well as for the subsidence of the edematous throat. There were an additional 24 cases where the mentioned condition of the membranes did not return to normal for from four to six weeks. There were an additional 5 cases who had, besides these signs, a unilateral nasal bleeding with skin excoriation in no wise differing from diphtheria carriers, save in the absence of the organism. There were, as well, 2 cases with discharging ears who showed the inflamed membranes of the mouth and throat. In one remote neighborhood, with previous absence of the disease, one such carrier was held for two weeks after being declared well, because of the buccal-pharyngeal signs. The parent was openly amused by my warning that the patient could infect at that time a younger susceptible sister, was indignant at my refusal to remove the card on a second visit one week later, yet almost penitently informed me that that same sister had come down with the disease just previously, at my third visit the following week. The only two cases in a ward in the opposite side of the city were both traceable to visiting relatives in the infected area while a card was on the house, although they considered themselves well. A well-marked instance was the reporting of two infants as cases where no contact could be found at the time. Ten days later, when well, I found at the house for the first time, the brother, who was a school child, who had never been sent out for a permit. He had had measles two years previously and had now an excoriating, bleeding, unilateral nasal condition, as well as a naso-pharynx, which was in no wise dissimilar from a measles tongue. He was isolated for some ten days before the mucous membranes were normal. During that period and for some weeks following, there were neither further cases in the neighborhood among infants, nor were there cases among children of

the same schoolrooms where there had been a number of cases appearing after the family had been reported, for a period including upwards of one week after he was isolated. I was asked to see a suspected case of scarlet fever in a boy who three days previously had had a scarlet fever eruption. In the absence of anything suspicious about the throat or tongue, other than a slightly edematous throat and a clean tongue, with the fact that there were measles cases in the boy's room at school, I advised the family to isolate him for a week or ten days as a mild measles in one who had had them some years previously. One week later a younger brother in the family and a boy of similar age in another family in the house were evident cases.

There is, then, sufficient evidence to justify isolation of all cases of measles, from susceptibles until the inflammation of the throat and tongue has entirely subsided. The demonstration of a normal tongue in a convalescent measles case and the tongue of the carrier, though both cases may have had the same date of onset, is sufficiently characteristic to be appreciated even by the laity. As with scarlet fever, discharging ears and desquamation are rarely finished before the return of a normal mucous membrane of the naso-pharynx, including the mouth. How successfully effective my attempts at controlling these carriers of convalescence is, can be measured at the end of the year in comparison of the number of cases in the community during the epidemic, as contrasted with our neighbors who had their 1500 and 2000 cases the year past, as well as the success in the prevention of a similar epidemic in the other eleven wards of the city, as has been going on for the past three months in three wards. There is one positive measure, as shown by an increased school attendance for each of these three months over the previous year, and that increase beyond the increase of gain of school scholars over the previous year, despite an epidemic of measles from which the city was free during the previous year.

On the diagnosis of measles there is one point that is not given sufficient attention by physicians. There is a frequent preliminary erythema a day or even two days before the characteristic rash, which led to the diagnosis of scarlet fever in 4 of these cases. In the presence of such a rash the Koplik's sign, as well as the general condition of the mucous membrane of the tongue and throat, should warn against a too immediate diagnosis.

In the light of my previous experience, a frequency of German measles during the present measles epidemic shows that disease to be a true "grippe" with a measly rash. Characterized by the absence of the typical measles conjunctivitis, the absence of Koplik spots, by the presence of the more general cervical low-grade glandular enlargement, the general free perspiration or sweats, I have been more impressed with

the confirmation of the diagnosis in the other members of the family. It has been the rule that with German measles in the older children, the younger children who have had neither measles nor German measles escape both during and following the illness, but in every member of those younger children, one will have had a bronchitis, one a tonsillitis and one just plain "grip." Physician and family alike remark how extraordinary it is that the youngest who were exposed to the German measles did not take it. German measles, Dukes' disease and the Fourth disease may all be listed as either "La Grippe," or, in some instances, a missed measles or scarlet fever.

CONCLUSIONS.

Attempts to control measles must recognize carriers of convalescence; they may be recognized by the inflammatory condition of the mucous membranes of the nose, tongue and throat.

German measles is not a diagnosis, and as such is unnecessary in medical nomenclature. It is either true measles or true grippe.

Book Review.

Gynecology for Students and Practitioners. By THOMAS WATTS EDEN, M.D., F.R.C.S., F.R.C.P., (Temp. Major, R.A.M.C.) and CUTHBERT LOCKYER, M.D., B.S., F.R.C.S., F.R.C.P.; with 513 illustrations and 20 colored plates. New York: The Macmillan Company. 1916.

The object of the authors of this book has been to "set forth a comprehensive account of the special diseases of women" and in order to "keep an even balance between the pathological and clinical aspects of the work" collaboration between two writers has been employed advantageously.

The illustrations are abundant and clear. The classification of general gynecology, regional gynecology and operative gynecology has been adopted for its usefulness in clinical work and in teaching, rather than on account of any logical basis. Knowledge of obstetrics forms an essential part of the training of a gynecologist and in this work attention is paid to the overlapping of the two subjects.

The result is an unusually well balanced book, up to date yet conservative; giving the newer views but cautious when evidence tends to yield to theory. The style is clear and direct and the tone throughout is scholarly. The index is excellent, but the book lacks a bibliography.

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STREAM POLLUTION.

ONLY after a great deal of abuse of the inland waters of this country is there an awakening to the great economic and sanitary burden uncontrolled pollution is placing upon the public at large. Investigations carried out by Dr. Allan J. McLaughlin of the United States Public Health Service, as well as the International Joint Commission (Pollution of Boundary Waters), have done a great deal to bring the matter definitely before the public. There has been, however, so much conflicting legislation among the States, and so many confusing judicial decisions and views of this condition, that no rule as to the degree of pollution permissible can be formulated which shall be binding everywhere. While the tendency previously has been to view the utilitarian—and particularly the degree of utilitarian—uses to which the stream must be put because of some particular industrial or communal need, as the index of the degree of

permissible pollution, there is now, fortunately, a tendency to make the degree of pollution dependent upon the amount consistent with the sanitary and even the esthetic considerations of the communities concerned, and not entirely upon economic advantages of any one community. On the other hand, it never was intended that waterways be kept in pristine purity. That is neither possible nor desired in inhabited communities. Water, and especially flowing water, can take care of a good deal of pollution. There is a tendency to much self-purification. This question is intended only to reach pollution of extraordinary degree, which so overburdens the stream at one period that it cannot free itself. It imports a large degree of selfishness, to say the least, for a community above a stream to solve its problem of sewage waste at the expense of a community below. When water will cause disease in a community consuming it, or will infect or destroy marine life in it, the degree of pollution must be extreme indeed. When typhoid is carried in water, it is a sign that colon infection must be very large. With ordinary or permissible pollution this is not likely to occur, because in exposure in so poor a medium as water, and in the dilution in which it can reach the consumer, the bacillus cannot be a factor in the transmission of this disease. The infection of oyster beds occurs in polluted streams particularly, either because there is so high a degree of pollution, or because—which is the more likely—the beds are situated where they catch the sewage in a fresh and concentrated form.

Supplying its inhabitants with safe potable water is one of the corporate duties of a community. Individuals or their kin have been awarded money damages where a municipal corporation has failed in this duty, and disease or death resulted. The general health condition of a community is so much within the control of the community that this liability should extend to any disease when it reaches epidemic proportions. The community has a duty to supply a health organization on the same scale and with the same proportionate expenditures as it supplies the material wants of its inhabitants.

In the last war in which this country was engaged, flies and polluted water caused the major portion of the casualties among the soldiers while in training camps in various parts of the country and before they reached the field of

operations. In this war, where a much larger number of military units must be raised and trained in various camps, it will be quite important to safeguard the water supplies of the localities where such camps are to be located. No amount of antityphoid care can be as beneficial as the maintenance of pure water and food supply.

HEAT AND INFANT MORTALITY.

THE high rate of mortality among infants during the summer months, especially among the poorer classes, is a problem that is continually presenting itself to the profession at the beginning of the hot weather. That part of the summer infant mortality that is properly placed at the door of contact infections from flies, from dirt, and from bad milk, while very large, is gradually resolving itself, through appropriate milk legislation, fly-extirmination campaigns and general education. Yet there is undoubtedly a great deal of infant mortality which is the result of conditions outside of these factors, and is directly due to temperature, lack of adequate ventilation and generally poor housing conditions.

In general, it can be said that hot summers have an abnormally high infant mortality, while the cool summers have the reverse (Schereschewsky, Public Health Reports, No. 155). This is a reversion again to the old belief that heat is a direct factor, although it was believed more recently that heat merely enhanced and allowed the better action by bacterial and other deleterious agents. Indeed, so much of the death rate during the hot weather is accompanied with gastro-intestinal symptoms that it is hard to dissociate the conditions. There is a high early summer mortality and a late summer mortality. The deaths in the early summer are accompanied with rather acute symptoms of short duration, and not usually referable to the gastro-intestinal tract, but rather to the central nervous system, and would appear to be the direct result of the rise of temperature. The late summer mortality is, however, usually accompanied with gastro-intestinal symptoms, chronic in nature. Death results after long-standing illness, and very often a considerable time after the drop in temperature. It would appear, therefore, that, while the deaths in the early part of summer were caused directly by heat, those in the late summer were the indirect results. It must, never-

theless, be observed that the outside temperature is no index of the indoor temperatures in the homes of the poor. Indeed, Flugge found that among the poor the mean indoor temperatures might exceed the mean outdoor by as much as 9.5° C. He found, further, that with outdoor temperatures ranging from 21° C. to 23° C. there were indoor temperatures ranging from 35° C. to 37° C. These temperatures are much increased for the child by excessive clothing, rubber diapers, house heating, congestion, etc. Almost any temperature outdoors is better for the child than the indoor conditions. It fully justifies the outdoor and fresh air treatment advised for these infants when they suffer the direct or indirect effects of the hot weather. Liefmann found that the heat effects were not initiated except when the temperature rose above 24° C. He found that children living in basements and cellars had a lower mortality than children in the same environment, only because of the lower temperatures obtaining in these underground dwellings.

Where air had free access to the houses, the mortality was lower than where it had not. The free circulation of air tends to lower the temperature and proves of general benefit in the reduction of infant mortality. Prausnitz found that in respect to ventilation and the free circulation of air, infant mortality ranged from 15% where houses allowed of thorough ventilation, to 65% where ventilation was woefully lacking.

RECONSTRUCTION HOSPITALS.

ONE of the problems which is ever present, but which will become more acute during the present war situation, is the reëducation of the maimed and disabled patient to enable him to return to his place in the community and, in spite of his handicap, maintain himself in leading a useful life. The work of repairing shattered bones and supplying mechanical devices for missing members falls naturally in the field of the orthopedic surgeon. The Government, in recognizing this, has arranged for the establishment over the country of reconstruction hospitals where the newest and most approved methods known to orthopedic surgery and mechanical appliance, will be practised for the benefit of the crippled soldier, to fit him to fill a useful and self-supporting place when he returns to civilian life.

As the first step in organizing these reconstruction hospitals, the Government has commissioned Dr. Joel E. Goldthwait as Major and has sent him to England and France on a tour of inspection of the orthopedic hospitals there to observe what is being done there for the care of cripples. Dr. Goldthwait sailed for Europe this week and with him went a unit of surgeons who will be detailed in English reconstruction hospitals under Colonel Robert Jones. The following men will be commissioned with the rank of Captain: Dr. W. G. Erving, Washington, D. C.; Dr. C. R. Metcalf, Concord, N. H.; Dr. W. I. Baldwin, San Francisco, Cal.; Dr. A. R. MacAusland, Boston, Mass.; Dr. De Forest P. Willard, Philadelphia, Pa.; Dr. H. Winnett Orr, Lincoln, Neb.; Dr. S. M. Cone, Baltimore, Md.; Dr. M. S. Danforth, Providence, R. I.; Dr. C. F. Eikenbary, Spokane, Wash.; Dr. Roades Fayerweather, Baltimore, Md.; Dr. F. C. Kidner, Detroit, Mich.; Dr. Wallace Cole, St. Paul, Minn.; Dr. J. C. Graves, Spokane, Wash.

Those given the rank of Lieutenant are: Dr. R. C. Abbott, San Francisco, Cal.; Dr. Mitchell Langworthy, Chicago, Ill.; Dr. Louis Cass Spencer, Baltimore, Md.; Dr. H. A. Durham, New York; Dr. C. L. Hall, Washington, D. C.; Dr. Robert I. Johnson, Baltimore, Md.; Dr. R. Wallace Billington, Nashville, Tenn.; Dr. J. C. Wilson, Hartford, Conn.

Before his departure, Dr. Goldthwait planned the organization of a reconstruction hospital on Parker Hill, Roxbury, Mass. It is proposed to build at once four wards of twenty-six beds each, at a cost of \$3000 a ward. This does not include equipment, which will come from the Government and the Red Cross. Heat and light service will be supplied by the Robert Bent Brigham Hospital, in conjunction with which the Reconstruction Hospital will be operated. The treasurer of the fund for building the Hospital is Charles S. Rackemann, and up to the present time nearly \$3000 has been pledged. Dr. E. G. Brackett will be in charge during Dr. Goldthwait's absence.

When Dr. Goldthwait returns from abroad he will go over the country and establish similar hospitals in the leading cities, based on his knowledge and experience in the requirements of this new and most vital phase of medical service.

MEDICAL NOTES.

WOMEN PHYSICIANS AMONG THE VIKINGS.—The issue of the *British Medical Journal* for January 20, 1917, quotes a paper on "Women Doctors of the Viking Age," read at a meeting of the Viking Society for Northern Research on January 6. The period referred to includes the time from the eighth to the tenth centuries.

"A good deal of the doctoring of the time was connected with a belief in witchcraft, and a remarkable figure in one of the sagas is Brynhild, the valkyr or handmaiden of Odin, who dwells on a mountain, and is said to be a wise woman, skilled in magic, pharmacy, herbalism, and the binding of wounds. A hint as to the character of the pharmacy is to be obtained from the 'Song of Laws,' where various specifics are mentioned, such as oak against binding of the bowels, spur of rye against hernia, and neather against biting sickness. Many of the women who practised as leeches received merely a passing mention in the tales. There are some vague references to midwifery and leechdom in the great Icelandic prose 'Edda'; and in the 'Vassorfridinga Saga' the leech Thorvardr makes her appearance to heal the men's wounds after battles; and, again, in the saga of 'Olaf Tryggvason' it is told how Olaf I of Norway (969-1000) having received two serious wounds—one from a stone and the other from an arrow—at the disastrous sea battle of Svöld, sought the help of Astrid, the woman leech, and remained with her until he was cured. But the most vivid of all the narratives is that contained in the saga of 'St. Olaf the Holy,' where the woman leech is introduced, cleansing the wounds of the fighting men with warm water. To her comes Thormod, the warrior poet, who explains his lack of ruddiness by the arrow which has lodged in his side:

It was darksome metal,
Driven by main, flev through me;
The perilous sharp iron
Bit nigh the heart, ween I.

Thormod having cast off his clothes, the leech examines the wound, and finds iron standing therein. There was already in the stone kettle a mass of leeks and other herbs, which, sodden together, were given wounded men to eat, in order that the leech might divine the extent of the internal mischief by discovering whether the leek smelled out through the wound or not. But Thormod refuses to take the concoction, preferring immediate recourse to some primitive surgery. The leech takes the gripping tongs in the attempt to draw out the iron, but it is too deeply embedded to stir, and she cannot get sufficient purchase, owing to the swelling of the part. Then Thormod bids her shear close up to the iron so that it be well caught by the tongs, and he will pull it out himself. This the leech does, and Thormod, having first thoughtfully paid his fee in the shape of a gold brace-

let which he detaches from his arm, takes the tongs and pulls out the arrow, on the barbs of which lie sinews from the heart, some red, some white; after which exertion he sinks back and is dead. A derivative of the Old Icelandic *laeknir*, meaning leech, is said to be still the only word in Iceland for doctor. Etymologically, the word in this sense is not, we believe, derived from the name of the animal, but is related to a Norse verb meaning to heal, and it has been suggested that the animal got its name because it was used by healers, "leeches."

THE AMERICAN THEATRICAL HOSPITAL.—There has been opened in Chicago a hospital where sick and indigent people of the stage and other branches of the amusement field may be cared for. It is to be called the American Theatrical Hospital.

MEETING OF NATIONAL TUBERCULOSIS ASSOCIATION.—At the recently held annual meeting of the National Association for the Study and Prevention of Tuberculosis a strong protest was made against the United States Government assisting patent medicine concerns in the exploitation of China. A resolution was framed which was particularly aimed at a special consular report issued by the Department of Commerce in March which, it is said, urged patent medicine interests of this country to exploit China and the Chinese people.

The resolution condemned this action of the department and urged that hereafter the influence of the United States Government should not be used in support of the patent medicine business. Resolutions were also adopted pledging the support of the Association to the American Red Cross in promoting Red Cross work in any form. At the same time public health nurses were urged to continue in their present fields of activity, owing to the fact that their special training in tuberculosis work and other special public health endeavor is particularly needed at this time to combat disease and social problems created by the war.

The Association also declared in favor of national prohibition for both soldiers and civilians during the war period and for one year thereafter. Colonel Theodore Roosevelt and Sir William Osler were elected honorary vice-presidents. Other officers were elected as follows:

President, Dr. Charles L. Minor, Asheville, N. C.; vice-presidents, Dr. Frederick L. Hoffman, Newark, N. J., and Dr. David R. Lyman, Wallingford, Conn.; secretary, Dr. Henry Barton Jacobs, Baltimore; treasurer, Dr. William M. Baldwin, Washington, D. C.

A committee of three was appointed to arrange plans for dealing with the important matter of tuberculosis in the future army of the United States.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The annual meeting of the American Medico-Psychological Association will be held in New York City on May 29, 30, 31 and June 1, 1917. Hon. John P. Mitchell, Mayor of New York, will give the address of welcome. The morning of the first day will be occupied with the address of the president and reports of various committees. The following days will be given to the reading of papers from many well-known men in this particular field of medicine. On the afternoon of June 1, the Hon. Carl Vrooman, Assistant Secretary, United States Department of Agriculture, will deliver an address upon the food situation in this country, resulting from our participation in the "World War."

The question of having all state institutions throughout the country make an earnest endeavor to become self-sustaining as far as their food products are concerned will be discussed. Our country is entering a very critical period in its history. The successful termination of this war depends almost entirely upon the ability of the farmers to grow sufficient crops to feed not only our own people, but the greater portion of Europe. This is a stupendous task and will require the most careful management and intensive development of the agricultural forces of this Nation. If our institutions make a special effort to grow all or a part of their food supplies, it will be an important factor in relieving the situation. The intensive cultivation of every foot of arable land on hospital property, the purchase or rental of adjoining land, for agricultural pursuits; the conservation of all winter vegetables; the occupation of the greatest number of patients, both men and women, on the farm; the purchase of stock and agricultural implements, which will enable the hospitals to develop their resources to the limit are all questions of primary importance and will be discussed at this meeting.

In an emergency such as this country is facing, legislatures and boards of control will, no doubt, make special efforts to finance and cooperate in every way with our state institutions when they realize the important part the institutions can take in helping solve the food problem. Members are requested to come prepared to make brief reports on what is being done at the present time at their respective hospitals and make suggestions that may be helpful to others.

ST. LUKE'S HOSPITAL, NEW YORK.—It is announced that on May 21 St. Luke's Hospital, New York, opened a new ward of 30 beds for the free treatment of men rejected from military enlistment for minor and remediable physical defects. It is estimated that the cost of this service will be about \$2000 a month. It will be maintained for the duration of the war.

WAR NOTES.

EARLY SURGICAL TREATMENT OF GUNSHOT WOUNDS.—In the issue of the *Lancet* for February 17 is published the following item relative to the invention of the rapid firing gun and the early surgical treatment of the severe wounds produced by the early quick-firing harquebuses.

"It must be more or less an accident that we have not got in early English surgery ample accounts of gunshot wounds. The quick-firing hand gun seems to be such a modern invention that it is curious to find that it is really 400 years old, and that a King of England so closely connected with medical men as Henry VIII should have been interested in the invention. In the little known *Chroniques des Iles de Jersey, Guernsey, Auvergnny et Serk*, it is related how:

Hellier De Carteret, Bailly de la dite Isle de Jersey, se transporta vers le Roy Henry VIII, auquel il remonstra le grief et injure que le dit Sire Hugh Vaughan, Capitaine de la dite Isle, luy avoit faite en Cour séante, et comment le Roy luy confirma sa patente, touchant son office de Bailly soubz le grand Seeau d'Angleterre durant sa vie, et aussy le fist son Serviteur et Esecuier tranchant, dont le dit Bailly fut sermenté solennellement ainsy qu'en tel cas est requis et accoutumé. Et aveq cela le Roy donna congé et licence au dit Bailly, de tirer tant de la harquebuse que de l'arcabaleste en quelque endroit que ce fust en tout le Royaume d'Angleterre, tant augibier que es bestes sauvages sans aueunement en estre réprins ni destourbé d'aucun durant sa vie; et de ce, luyen fist bonne assurance soubz son privé signe. Et fut le dit Sire Hugh Vaughan, Capitaine comme dit est, envoyé quérir, par un Héreault d'armes en toute haste.

This giving by the King of a license to use the harquebuse—the original hand gun—was an exceptional privilege, as the British archers were thought highly of and encouraged.

The next few lines relate the invention by Hellier De Carteret of a quick-firing harquebuse, which would also aim in two directions at the same time, and King Henry VIII's interest therein. The greatest improvements in the harquebuse are generally credited to Filippo Strozzi, an Italian, in the year 1530.

Le dit Bailly estant ainsy parvenu en la faveur du Roy par le moyen des Seigneurs du Conseil, et aussy que le Roy se délectoit fort à tirer tant de l'arcabaleste que de la harquebuse, pouvoit ordinairement aller aveq le Roy quand il alloit tirer en quelq'un de ses Pareqs fust es bestes sauvages ou autre gibier; et mesmément pour autant que le dit Bailly avoit trouvé une invention de tirer de sa harquebuse 5 ou 6 traits de boulez l'un après l'autre et à plusieurs marques toutes d'une même charge l'une avant l'autre et d'un même feu, et aussy de son arcabaleste tirer deux vires tout d'un coups, l'une d'une voye et l'autre de l'autre et à deux marques. Le Roy

voulut seavoir et apprendre la dite invention et l'expérimenter et pratiquer luy-mesme, à quoi il y print un fort grand plaisir, tellement que le dit Bailly fut de plus en plus en la bonne grâce et faveur du Roy.

The wounds produced were so severe that a distilled aromatic spirituous liquor termed 'harquebusade' came into use for treating the shot wounds, and its composition was altered from time to time, according to experience or fancy. The Seigneurs of St. Ouen, Jersey, have for so long a time been named De Carteret, that Philippe De Carteret, who was the Seigneur in 1585, was the fifty-ninth Seigneur of St. Ouen, and the claim has been made that it would be difficult to find a race so old and direct in any kingdom."

OFFER OF HOSPITAL AND YACHT TO GOVERNMENT.—Mr. Albert C. Burrage, who for some years has supported the Burrage Hospital on Bumpkin Island, Boston Harbor, as a hospital for sick and crippled children, has offered the hospital with his steam yacht *Aztec* to the Government to be used in the care of sick and wounded sailors. The buildings on Bumpkin Island will accommodate two hundred beds with quarters for the staff and help. The *Aztec* is the largest steam yacht, with one or two exceptions, on the Atlantic coast, and is now being put in commission. Mr. Burrage has expressed willingness to support both hospital and ship, the former up to \$4000 a month and the latter up to \$8000 a month, for a period of at least four months. In his letter to the Government he expressed himself as follows:

"Hon. Josephus Daniels, Secretary of the Navy, Washington, D. C.:

Sir—Bumpkin Island is a beautiful island of about forty acres lying in Boston harbor, midway between Hull and Hingham, and upon this island is located the Burrage Hospital, which is devoted to the free care and treatment in summer of sick and crippled children. This hospital was built by myself, and is operated by the Burrage Hospital Association, which is wholly supported and officered by myself and my immediate family.

This hospital, besides the rooms for the staff and help and the smaller rooms for patients, has eight wards, each capable of holding about twenty-five beds, and the location and character of the hospital is such that, in case of war, it would be accessible and most suitable for the care of those in the navy who are wounded or ill.

The steam yacht *Aztec*, with a length of 260 feet over all and 216 feet on the water line, and a beam of 30 feet, was built by myself as a pleasure yacht for myself and family, and has never been used for any other purpose. It was specially designed and fitted up for a family pleasure boat and not for rough usage. I used

the boat for four months last summer, and it is now being overhauled at Greenport, L. I., for my use this summer.

The character of this yacht is such that it would be most suitable for a hospital transport boat to take men from naval ships on the New England coast to a land hospital such as the Burrage Hospital. In case of war being declared in the near future between the United States of America and some European nation, I beg to offer the United States Government the free use of the Burrage Hospital during the war, for the use of the naval forces of the United States, and also hereby agree that in case of such war, I will personally pay the expenses of the operation of the hospital as it now is, up to four thousand dollars per month for at least four months from the beginning of such war; and the United States Government may erect such other structures as it wishes upon the island, and may, at its own expense, continue, during the war, the operation of this hospital after such period of four months; it being understood that the Government will keep the hospital in good order and repair, keep it fully insured and return it at the close of the war in as good condition as it now is.

I also beg to offer to the United States Government the free use of the yacht *Aetec* as such a hospital transport ship for carrying, within the first district, *i.e.*, from Chatham to Eastport, the sick and wounded men of the United States Navy to and from the Burrage Hospital for such period of four months from the beginning of such war; and I agree that, in case of such war, I will personally pay the expense of the operation of such hospital ship as it now is, up to eight thousand dollars per month for at least four months from the beginning of the war; and the United States Government may, at its own expense, during the continuance of such war, after said period of four months, operate said yacht as such hospital ship without compensation to me for the use of such boat, but it being understood that the Government will keep the boat in good order and repair, keep it fully insured and return it to me at the close of the war in as good condition as it now is.

Respectfully,

ALBERT C. BURRAGE."

WAR RELIEF FUNDS.—On May 19 the totals of the principal New England war relief funds reached the following amounts:

Belgian Fund	\$604,767.92
French Wounded Fund	226,920.64
Marshal Joffre Fund	224,260.00
Armenian Fund	182,999.05
Serbian Fund	119,794.66
Permanent Blind Fund	113,944.65
British Imperial Fund	99,140.00
Surgical Dressings Fund	88,946.97
Boston Ambulance Fund	83,691.48
Polish Fund	73,512.28
Metropolitan Red Cross Fund ..	60,614.82
Italian Fund	41,165.77

French Phthisis Fund	13,999.04
LaFayette Fund	13,310.00
Russian Refugees' Fund	2,465.48
American Volunteers' Fund	1,325.53

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday, May 19, 1917, the number of deaths reported was 252, against 227 last year, with a rate of 17.01 against 15.57 last year. There were 45 deaths under one year of age, against 33 last year, and 63 over 60 years of age, against 62 last year.

The number of cases of principal reportable diseases were: diphtheria, 98; scarlet fever, 41; measles, 227; whooping cough, 26; typhoid fever, 1; tuberculosis, 51.

Included in the above were the following cases of non-residents: diphtheria, 18; scarlet fever, 9; measles, 1; whooping cough, 1; typhoid fever 1; tuberculosis, 3.

Total deaths from these diseases were: diphtheria, 12; scarlet fever, 1; measles, 3; tuberculosis, 19.

Included in the non-residents were the following deaths: diphtheria, 3; measles, 1; scarlet fever, 1; tuberculosis, 2.

ANTHRAX IN MALDEN.—A worker in a brush factory in Malden has been found to be suffering from anthrax. He is at present in the Frost Hospital, Chelsea.

BOSTON CITY HOSPITAL ALUMNI ASSOCIATION.—The annual meeting of the Boston City Hospital Alumni Association was held in this city on April 11. In the forenoon a series of papers was presented and operations were performed in the surgical amphitheatre of the hospital. Luncheon was served at 1 p.m., and in the evening the annual dinner was held at the Copley-Plaza Hotel. Dr. E. G. Brackett presided at the dinner, and there were addresses by Drs. E. H. Nichols, J. G. Blake, J. H. Courtney, R. I. Lee and W. I. Bullard. Dr. George H. Washburn of Boston was elected president; Dr. Herbert L. Smith of Nashua, N. H., vice-president; Dr. W. R. P. Emerson of Boston, treasurer; and Dr. Cadis Phipps of Boston, secretary, for the ensuing year.

SPRINGFIELD ACADEMY OF MEDICINE.—The annual meeting of the Academy was held at 137½ State Street, Springfield, on Tuesday, April 10, 1917. Officers were elected for 1917-18. Dr. Edward Martin of Philadelphia addressed the meeting on "A Story of Some Fractures of the Femur." The following amendment to the by-laws was voted upon: Article V to read as follows: "Annual dues shall be such as shall be voted annually by the Academy. The fiscal year shall end on March 31 of each year. The president shall appoint each year, on or before March 1, an auditing committee to audit the treasurer's accounts and submit its report at the annual meeting."

ROBINSON MATERNITY BUILDING.—The maternity department of the Massachusetts Homeopathic Hospital, known as the Robinson Maternity, has been in operation a little more than a year, and has been filled to capacity almost since its opening. During 1916 it cared for 1564 mothers, and 1359 babies were born under its roof. The suites of rooms with bath and balcony, where the patient may have her own physician, are so popular that the demand has exceeded the supply, and the applications for general ward accommodations, comprising those who are received free and those who barely pay cost expenses, has been so far beyond the present capacity of eighty beds, that adjoining property has been secured for future expansion. About \$300,000 are needed for this enlargement, and the hospital looks confidently to a generous public to supply the means for meeting the needs of this department of hospital work.

BABY HYGIENE ASSOCIATION.—The eighth annual public meeting of the Baby Hygiene Association was held recently at the Copley-Plaza, Boston. Dr. John Lovett Morse presided and presented the following statistics for the past year. He stated that the Association during that time had taken care of 5000 babies, or about 25% of the 20,000 babies born. He also called attention to the decreasing importance attached to the question of milk, as compared with the necessity of training mothers. More than half of the babies brought to the stations are breast-fed. Last year the nurses paid 67,000 visits. Three nurses were awarded diplomas by the Association for their work. John F. Moors, president of the Associated Charities, spoke appreciatively of the educational value of the Association.

BOSTON LYING-IN HOSPITAL.—The recently published report of the 84th year of the Boston Lying-in Hospital covers the work of that institution for the year 1916. A total number of 819 mothers and 783 babies have been cared for in the hospital. The out-patient department has cared for 1632 mothers and 1624 babies. The decrease in the number of cases, both in the Hospital and in the Out-Patient Department, is regarded as due to the lack of immigration and to the return to home countries for military service of many reservists. It is also to be noted that the material prosperity of all wage-earners during the past year has resulted in fewer applications for charitable care of the wives during their confinement. Only about one-half as many pauper cases were sent in to the Hospital by the Overseers of the Poor. In the out-patient department there was a decrease of 16% in the number of free cases attended. The work of the Pregnancy Clinic is thoroughly organized. The new South End Clinic, which was opened on January 22, records about 2,200 visits for the period of a little over eleven months. The year has seen the inauguration of the Medico-

Social Department in connection with the Out-Patient and Pregnancy Clinic, and two workers are now engaged in this service. Their success has amply proved the desirability of the experiment. The committee on raising funds for the new building reports that in March, 1917, they had obtained \$364,552.86.

The Massachusetts Medical Society.

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.

WORCESTER DISTRICT MEDICAL SOCIETY.—The annual meeting of the Worcester District Medical Society was held at the State Mutual Restaurant, Worcester, Wednesday evening, May 9th. About 80 members were present at dinner, after which the reports of officers and committees were heard and acted upon and officers for the ensuing year were elected as follows:

President, Dr. Michael F. Fallon, Worcester; vice-president, Dr. W. L. Johnson, Uxbridge; secretary, Dr. E. L. Hunt, Worcester; treasurer, Dr. George O. Ward, Worcester; orator, Dr. R. P. Watkins, Worcester.

Then followed the oration by Dr. William L. Johnson, of Uxbridge, on the subject: "A Physician's Impressions of Florida."* The orator received an ovation as an acknowledgment of his valuable services to the cause of legitimate medicine in the Massachusetts Legislature during the present session of that body.

Addresses by Dr. Samuel Bayard Woodward, president of the Massachusetts Medical Society, and by Dr. Walter Prentice Bowers, his predecessor in that office, followed. The remarks of both these gentlemen were received with an enthusiasm which left no room for doubt as to the pride of the members of their home society in their official achievements.

The retiring president, Dr. George O. Ward, then presented his successor with the following graceful tribute:

"There remains for me one more duty, by no means the least important, the induction of my successor into office. I am sure he needs no introduction. His good name and high professional standing are well known beyond our small borders. In our city, you know, he has the entire respect both of our profession and the public. His service to our society, outside our immediate circle, has deserved our gratitude, and it gives me great pleasure to relinquish this chair to Dr. Michael Francis Fallon, Surgeon-in-Chief to St. Vincent's Hospital."

Dr. Fallon responded briefly, accepting the office, thanking the society for the honor bestowed and promising his earnest effort in all the duties pertaining to his office. At his request all sang the "Battle Hymn of the Republic," and the meeting adjourned.

ERNEST L. HUNT, M.D., *Secretary*.

* This address will be published in a later issue of the JOURNAL.

Obituary.

HERBERT S. GAY, M.D.

Dr. HERBERT S. GAY, a well-known Boston physician, died suddenly of pneumonia, at his home, on April 21, 1917. He was born at Springfield in 1871, the son of Edward and Mariette Gay. He received his early education at the Westfield Normal School, and from there entered Harvard Medical School, from which he graduated in 1901. During his course at the Medical School he taught school at Dedham, Cambridge and East Boston. Before beginning practice he served as house officer at the Carney Hospital and at the Boston Lying-in Hospital. He later served on the staff of the Boston Dispensary and the Mt. Sinai Hospital, and at the time of his death was on the staff of the Dispensary for Women. He had been an instructor for several years at the Tufts Medical School.

Dr. Gay was a member of the American Medical Association, Massachusetts Medical Society, and the Boston Medical Library Association.

He is survived by his widow and an infant daughter.

Correspondence.

A FURTHER EXPOSITION OF THE ABDUCTION TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR.

New York City, April 4, 1917.

Mr. Editor:—

I had inferred from Dr. Cotton's letter that the presentation of x-ray pictures in support of "alleged data" might be a basis for further discussion. His retirement from the field leaves certain loose ends which I wish to gather up in order to complete the argument for efficient treatment.

The abduction treatment is a systematic application of surgical principles to all varieties of fracture of the neck of the femur. The name of the method was chosen from its most salient feature, the fixation of the limb at the limit of normal, individual abduction (40° to 60°).

The persistent advocacy of this treatment during the past fifteen years has made the name familiar, and the position of abduction has been adopted by many surgeons who do not employ the abduction method. Ruth, for example, has informed me that he has thus modified the Maxwell method.

The position of abduction is not the abduction treatment, and the statement to be found in Dr. Cotton's book, that "union usually occurs in fractures originally unimpacted by the use of the abduction treatment" is an unqualified indorsement of the abduction treatment, whatever may have been his conception of it at that time.

In his letter, Dr. Cotton makes the somewhat cryptic statement that "abduction did not wait for Whitman to make itself heard or practised," and in a recent paper, published in the *Annals of Surgery*, he suggests that the abduction treatment developed on "lines laid down by Shaffer," because Shaffer had reported a case of ununited fracture of the neck of the femur treated successfully by a Taylor traction hip brace, combined with a surcingle for pressure on the trochanter. The brace, in adaptation to the con-

tractions, was applied in 45° of flexion and 20° of abduction.

In another treatise on fractures the statement is made that, since traction on the limb tilts the pelvis downward, a relation of abduction is thereby established by routine treatment, so like that of the abduction method "that the difference is only imaginary."

I doubt if Cotton would agree with Stimson, but the quotations will illustrate two of the several misconceptions of the abduction method.

There is another minor point in the mechanics of the method which has been questioned. In his letter, Dr. Cotton said that I classed leverage on the acetabular rim with capsular tension as a means of locking the fragments. It has since occurred to me that by leverage, which is used only as a means of reducing resistant deformity, he meant contact of the trochanter with the pelvis.

In the exposition of the anatomical basis of the method it has been stated that as the limb is abducted, the head of the femur descends in the acetabulum and emerges below it, the movement being finally checked by capsular tension and by contact of the outer border of the neck and trochanter with the rim of the acetabulum and side of the pelvis. This is true of the average or normal subject.

If the neck is abnormally long, or if its elevation is excessive (coxa valga), or if it is depressed (coxa vara) so that abduction is directly checked by the deformity, contact cannot be established. If, on the other hand, the neck is shortened, as, for example, by the crushing of an effective artificial impaction, contact of the trochanter with the margin of the acetabulum will limit the range of abduction, which, if forced, would separate the fragments.

This anatomical observation may be verified:

a. In the dissecting room, if the condition of the joint permits free movement, providing, of course, that the intervening soft parts have not been removed.

b. By x-ray pictures, one of which is presented.

c. By tests on paralyzed limbs (anterior poliomyelitis), in which atrophy and absence of muscular resistance permits direct palpation.

d. By inspection at open operations, most of which, the neck having been shortened by injury or disease, demonstrate the limitation of abduction due to contact of the trochanter and acetabular rim.

Attention is called to this point, because it has been questioned by others than Cotton. Stimson was unable in any specimen examined to bring the trochanter "within an inch of such contact;" by Moore, also, who has, however, reduced the interval to half an inch.

On the other hand, the only experimental work on the abduction method is that of Dr. A. S. Taylor, Professor of Operative Surgery in the Cornell Medical School (*Ann. Jour. Med. Sciences*, May, 1905). Taylor's conclusions are as follows:

"Abduction was limited:

"a. By the inferior ligaments and capsule.

"b. Impact of the posterior part of the trochanter on the soft tissues just above the acetabulum.

"Both of the obstructions seemed to occur simultaneously. Tension of the inferior capsule and its ligaments tended to cause spontaneous alignment of the fragments. The influence was more marked as the line of division approached the trochanter."

I have spoken of such contact as of minor importance because it is but one of the factors upon which security depends, the others being:

a. The direct mutual pressure of the apposed fractured surfaces assured by the horizontal position of the neck and capsular tension in complete abduction.

b. In epiphyseal fractures, and in some of those of the intra-capsular type, the base fragment may be inserted beneath the rim of the acetabulum, as illustrated in Figure 1 of my last letter.

c. In complete abduction the muscles are powerless as agents of deformity.



FIG. 1. Showing the contact of the trochanter and pelvis at the limit of normal abduction on the right side, and the direct limitation of abduction due to a shortened and depressed femoral neck on the left.

d. A plaster spica applied in complete abduction and hyperextension is an efficient support.

It is my contention that conventional practice is based upon inadequate mechanics. This inadequacy compels the disregard of surgical principles. It excuses inefficiency and neglect, and it is the most reasonable explanation for the extraordinary percentage of failures, even in cases of the most favorable class. It is supported by a doctrine of despair which makes progress impossible, as may be demonstrated by comparing a typical chapter on fracture of the neck of the femur of to-day, with one written fifty years ago.

The abduction treatment represents a higher standard of purpose and achievement because it is based on surgical principles. When, therefore, a qualified expert of the standing of Dr. Cotton states that it is unnecessary to apply the method properly, and who doubts its mechanical efficiency, it seems to me that I am justified in the interest of the cause that I represent, in analyzing the basis of his conclusions as it is presented in his writings.

This analysis shows Dr. Cotton to be a thorough-going conservative, upholding chance rather than technical skill as the determining factor in the result, the chance of the exact situation of the fracture as intra- or extra-capsular, and the chance of impaction or non-impaction. He believes that impaction is the only assurance of repair; therefore, it "is a crime to disturb it," unless the deformity is extreme, and in complete intra-capsular fracture it should be produced artificially, since otherwise non-union is inevitable.

It is evident that artificial impaction cannot improve nutrition, consequently it can serve only to fix the fragments in apposition. If, then, routine treatment is absolutely inadequate to assure this essential in one type of injury, it must be relatively inadequate for all and should be discarded.

Dr. Cotton does not reach this logical conclusion because he has no interest in the treatment of other forms of fracture "which do not do badly under any form of handling," although the report of the British Committee classified the results as good in but 23% of those actually treated. In other words, he accepts the present standard and emphasizes the futility of



FIG. 2. Fixation of the limb in full abduction and extension by a long plaster spica.

conventional treatment only as an argument for artificial impaction. He does not understand the mechanics of the abduction method, and apparently his only experience with it is as a supplement to artificial impaction, which, by shortening of the neck, makes full abduction impossible.

Maxwell, to whom Dr. Cotton refers with apparent approval, styled his treatment as one for intra-capsular fracture and claimed success in every case, or, as his associate, Ruth, states it, "bony union in every case if the patient survives four weeks."

It is true that Maxwell had no x-rays at his disposal, but neither had Sir Astley Cooper, who considered these cases hopeless and, therefore, simply supported the limb on a pillow for a few weeks, while Maxwell treated them by the only traction method that, from the mechanical standpoint, deserves serious consideration.

It is quite possible, therefore, that the conclusions of each reflected the quality of the treatment, just as the differences between Dr. Cotton and myself, in a more comprehensive sense, are capable of the same explanation.

The abduction treatment, as an exact method, applied with a definite purpose, calls for a higher standard of technical skill and experience in applying and adapting it to the character of the fracture, and to the quality of the patient, than has hitherto been at the command of this neglected injury. It has been placed at a further disadvantage by the misconceptions of the representatives of authority, but it has made steady progress.

In the volume on fractures of the *Nouveau Traité de Chirurgie* it is stated that "Cette méthode préconisée par Whitman est à l'heure actuelle partout appliquée." In other words, that it has come into general use. According to my observation, however, about all that is known of it is that the limb is fixed in abduction, which is the final step in the process, the order being:

- a. Complete reduction of shortening, under anesthesia, by manual traction, the trochanter being lifted and guided to its proper place.
- b. Correction and over-correction of the outward rotation.
- c. Abduction of the extended limb to the normal individual limit, as indicated by the range on the sound side.
- d. Fixation in full abduction and hyper-extension by a plaster spica, extending from the axillary line to the ends of the toes.

It may be noted that the limb is not abducted until after the fragments are adjusted.

The great majority of so-called impactions may be easily reduced by this manipulation, but in the resistant types, more common in early life, a certain degree of leverage will be required as illustrated in my last letter.

Deformity is always corrected in order to restore function and because repair should be favored by a more accurate adjustment of the fractured surfaces.

It will appear, therefore, that fracture of the neck of the femur may now be treated like other fractures, and, in my opinion, the result is more directly determined by the character of this treatment and by the experience and skill of the one who applies it than is that of any other injury of its class.

Dr. Cotton admits "that the welfare of hundreds of patients is involved in this problem," and I conclude, therefore, that two hardened controversialists like ourselves are not likely to think the worse of each other because of the manner in which honest convictions have been expressed. In fact, I feel under obligations to him for the opportunity to present the abduction treatment to the readers of the JOURNAL, particularly to my former colleagues in Boston.

ROYAL WHITMAN.

283 Lexington Avenue.

NOTICES.

UNITED STATES CIVIL-SERVICE EXAMINATIONS.

MEDICAL INTERNE, ST. ELIZABETH'S HOSPITAL.

June 6, 1917.

The United States Civil Service Commission announces an open competitive examination for medical interne, for both men and women, on June 6, 1917. A vacancy in St. Elizabeth's Hospital, Washington, D.C., at \$900 a year, with maintenance, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Male eligibles are desired for the existing vacancy.

The positions are tenable for one year, and pay \$75 a month and maintenance. During the year, however, a postgraduate course in mental and neurological diagnostic methods is given, an examination is held, and promotions to the next grade, junior assistant physician, are made. Beyond this there is regular advancement for men whose services are satisfactory. St. Elizabeth's Hospital has over 3,000 patients and about 800 employees to care for. In addition to the general medical practice offered, the scientific opportunities in neurology and psychiatry are unsurpassed.

Applicants must show that they are graduates of a reputable medical college or that they are senior students in such an institution and expect to graduate within six months from the date of this examination. The names of senior students will not be certified for appointment in the event they attain eligibility in the examination until they have furnished proof of actual graduation.

Applicants must not have graduated previous to the year 1915 unless they have been continuously engaged in hospital, laboratory, or research work along the lines of neurology or psychiatry since graduation, which fact must be specifically shown in the application.

Applicants must be unmarried.

Age, 20 years or over on the date of the examination.

No sample questions of this examination will be furnished.

Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D.C. Applications should be properly executed, excluding the medical and county officers' certificates, and filed with the Commission at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination as given at the head of this announcement should be stated in the application.

JUNIOR ZOÖLOGIST (MALE).

June 6, 1917.

The United States Civil Service Commission announces an open competitive examination for junior zoölogist, for men only, on June 6, 1917. A vacancy in the Bureau of Animal Industry, Department of Agriculture, Washington, D. C., at a salary ranging from \$1,400 to \$1,800 a year, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

The duties of the position will consist of laboratory

and field work in the investigation of animal parasites and routine work carried on in the Zoological Division of the Bureau of Animal Industry.

The prerequisites for consideration for this position are: Graduation from a college, university, medical college, or veterinary college of recognized standing in a course including at least two years' work in a biological laboratory, or the fact that the applicant is a senior student in such a course and institution and expects to graduate within six months from the date of this examination; or, for persons lacking a full college course as above described, graduation from a four years' high-school course or four full years of study in a school offering a course equivalent to that of a high school, and at least one year's experience in biological investigations for each year lacking of such college course. The names of senior students who pass the examination will not be certified for appointment until they have furnished proof of actual graduation.

Competitors must attain an average of at least 70 per cent. in the subject of practical questions.

Statements as to education, training, and experience are accepted, subject to verification.

Under the subject "thesis" the competitor may submit, in lieu of or in addition to a thesis on a zoological subject, any formal reports or publications of which he is the author or co-author. Unless a thesis is submitted the reports or publications must relate to some zoological subject. The material submitted must be accompanied under oath, taken before an officer authorized to administer oaths for general purposes, in the following language: "I, the undersigned, do solemnly swear (or affirm) that in the preparation of the accompanying material the composition is entirely my own, and that I have given full credit by quotation marks or references to authorities for any quoted matter." The examination number given the competitor at the commencement of the examination should be written on the material before it is handed to the examiner.

Applicants must not have reached their forty-fifth birthday on the date of the examination.

Applicants may be examined at any place at which this examination is held, regardless of their place of residence; but those desiring permanent appointment to the apportioned service in Washington, D. C., must be examined in the state or territory in which they reside and have been actually domiciled in such state or territory for at least one year previous to the examination, and must have the county officer's certificate in the application form executed.

Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all male citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications should be properly executed, enclosing the medical certificate, and filed with the Commission at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination as given at the head of this announcement should be stated in the application form.

RESIGNATIONS.

The following members of the medical faculty and instructing staff of Columbia University have resigned: Dr. George E. Brewer, professor of surgery; Dr. Virgil P. Gibney, professor of orthopedic surgery; Dr. Herman Von W. Schulte, associate professor of anatomy; and Dr. Homer Fordyce Swift, associate professor of medicine.

Dr. Charles P. Bancroft, for thirty-five years

superintendent of the New Hampshire State Hospital, has resigned from that position, his resignation to take effect July 1.

RECENT DEATHS.

FRANCIS HENRY BROWN, M.D., died at the City Hospital, Boston, as the result of a street car accident, May 16, 1917, aged 81 years.

CHARLES E. SIMMONS, M.D., a well-known New York physician, died at his home in that city on May 3, 1917. Dr. Simmons was born in Troy, N. Y., and was graduated from Williams College in 1860. He studied then at Göttingen University, from which he was graduated in 1862. Upon his return to this country he attended the College of Physicians and Surgeons of Columbia University, from which he was graduated in 1864. For the next four years he practised in his native city, but then moved to New York and continued there in practice until the time of his death. Dr. Simmons was, for more than thirty years, active in Democratic politics.

LOUIS JOSEPH LAMBOUTZ, M.D., dean of the faculty of medicine of the University of Paris, has recently died. He was born at Rheims, and both his father and grandfather were physicians. He was a member of a number of societies, and had written many valued works on medical subjects.

ALBERT CLARENCE LANE, M.D., a retired Fellow of the Massachusetts Medical Society, living in Woburn, died at the Massachusetts General Hospital, Boston, February 1, aged 65 years, following an operation for appendicitis. He was a graduate of the Long Island College Hospital in 1879, and was retired in June, 1916.

HERBERT W. CONN of Middletown, Conn., a well-known bacteriologist, died at his home on April 18, 1917. He was born in Fitchburg in 1859 and was graduated from Boston University in 1884. For some years he had been state bacteriologist of Connecticut and professor at Wesleyan University. He was president of the American Association of Bacteriologists and had written a number of books on bacteriology.

DR. LAURENCE L. PIERCE, chairman of the Board of Health of Arlington, Mass., died at his home, on April 27. Dr. Pierce was born in Arlington in 1876. He entered Harvard College and studied veterinary surgery, graduating in the class of 1898. He established himself in practice in his native town and was very successful. For many years he had served on the Board of Health, and for the greater part of the time was its chairman. He is survived by his widow and three sons.

NATHANIEL CLARK BACON HAVILAND, M.D., died at Worcester, April 22, aged 63 years. He was a graduate of the University of Vermont Medical School in the class of 1878, and had practised in Holliston and Worcester since 1899, when he joined the Massachusetts Medical Society.

J. EDWARD HOOLE, M.D., of Somerville, Mass., died suddenly at his home on February 15. Dr. Hoole was born in Lowell in 1869, and was graduated from the College of Physicians and Surgeons at Baltimore, in 1903. Since that time he had practised his profession in Somerville. He is survived by his widow and one daughter.

SIR FREDERICK WILLIAM BORDEN, M.D., who died on January 6 at Canning, N.S., was born at Cornwallis, N. S., in 1847. A physician by profession, he served for many years as a British army surgeon. From 1896 to 1911 he was minister of militia and defense in the Laurier cabinet, and was knighted for his efficiency in the organization of the Canadian troops who fought during the Boer War in South Africa.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

May 31, 1917

ORIGINAL ARTICLES

DRUG USERS IN COURT. By V. V. Anderson, M.D., M.A., Boston.	755
SHIFTLING, CHARLATAN AND VAGABOND: WHO THEY ARE AND HOW THEY ARISE. By J. Victor Haberman, A.B., M.D., D.M.S. (Berlin), New York City.	757
CONCERNING THE END-RESULTS OF TREATMENT OF FRACTURE OF THE ELBOW. By Harold Neuhoft, M.D., New York City, and Heinrich Franz Wolf, M.D., New York City.	759

MEMORIAL ADDRESSES.

EDWARD MARSHALL BUCKINGHAM, M.D. By George W. Gay, M.D., Boston.	761
DR. WALTER JAMES DODD. By C. A. Porter, M.D., Boston.	763
WALTER DODD IN FRANCE IN 1915. By Roger I. Lee, M.D., Cambridge, Mass.	764

CLINICAL DEPARTMENT

THE MUCOSA OF THE RECTUM AND SIGMOID COLON AS A FOCUS OF INFECTION. By Horace W. Soper, M.D., St. Louis.	766
A CASE OF MELANOTIC SARCOMA ARISING IN THE EYE, WITH METASTASES; AUTOPSY FINDINGS. By Lester Adams, M.D., Bangor, Me.	768
SYSTEMIC OIDIOMYCOSIS: WITH MANIFESTATIONS IN CENTRAL NERVOUS SYSTEM. By Frederic J. Farnell, M.D., Providence, R.I., and Samuel Starr, M.D., Providence, R. I.	771
COMPARATIVE STATISTICS ON PHYSICAL EXAMINATIONS OF PUPILS OF BOSTON PUBLIC SCHOOLS FROM DECEMBER 1, 1915, TO APRIL 1, 1917. By William H. Devine, M.D., Boston.	773

THE USE OF RADIUM IN THE TREATMENT OF CUTANEOUS EPITHELIOMA AND KERATOSIS SENILIS. By Frederick S. Burns, M.D., Boston, and J. Harper Blaisdell, M.D., Boston.	774
--	-----

BOOK REVIEW

A Text-Book of Fractures and Dislocations, with Special Reference to their Pathology, Diagnosis and Treatment. By Kellogg Speed, S.B., M.D., F.A.C.S.	776
---	-----

EDITORIALS

THE MALARIAL ENDEMIC INDEX.	777
A METHOD OF ANESTHESIA FOR SOLDIERS.	778
PELLAGRA AS AN ECONOMIC BAROMETER.	779
JOINT VOLUNTARY COMMITTEE ON MEDICAL PERSONNEL FOR MASSACHUSETTS.	779
MEDICAL NOTES.	779

THE MASSACHUSETTS MEDICAL SOCIETY.

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.	791
--	-----

OBITUARY

CHARLES EDWARD BUCK, M.D.	791
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MISCELLANY

THE MEDICAL SERVICE OF THE GERMAN ARMY.	791
NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.	792

Original Articles.

DRUG USERS IN COURT.

By V. V. ANDERSON, M.D., M.A., BOSTON,

Director Medical Service, Municipal Court, Boston.

FOR the purposes of this paper a group of seventy drug addicts was taken. As no other basis for investigation was required than their use of drugs, we were able to include every case as it came.

Those problems considered worthy of attack in order that the court might get a more intelligent understanding of these individuals were their physical and mental condition and industrial efficiency.

More particularly was an attempt made to get at the true mental make-up of drug users in order to see what, if any, deviations existed prior to their use of drugs, with the end in view of seeking an explanation for the high percentage of failures in treatment. The apparent futility of cures is a well known fact. Though they may get off of the drug, the majority of users sooner or later return to it.

Just what were the factors within the individuals themselves that accounted for the apparent failure on the part of fully developed drug addicts to be cured, we wished, so far as the limitations of such a study permitted, to determine.

The following table indicates the offenses for which these individuals were arrested and brought to court:—

TABLE OF ARRESTS.

OFFENSE	NO. OF ARRESTS
Drunkenness	17
Larceny	52
Offenses against chastity	68
Assault and battery	3
Breaking drug law	61
Suspicious person	1
Breaking and entering	5
Surrendered on probation	21
Vagrancy	4
Gaming	1
Disturbing the peace	1
Stubborn child	1
Non-support	1
	236

Being addicted to habit-forming drugs, it may seem like elaborating the obvious to state that these individuals will not respond to ordinary measures of court treatment, but require special consideration. This is a fact, and it is demonstrated very definitely in the following table:—

TABLE OF DISPOSITION AND RESULTS.

NO. GIVEN PROBATION	SATISFACTORY ON PROBATION	UNSATISFACTORY ON PROBATION	STILL ON PROBATION	NOT TRIED ON PROBATION	TOTAL
59	6	34	19	11	70
or	or	or	or	or	or
84.3%	8.6%	48.6%	27.1%	15.7%	100%

84.3% were placed on probation, 57.4% of whom proved distinctly unsatisfactory and had to be surrendered to the court.

27.1% of the total number of cases are still on probation, of whom more than one half are at present being handled within non-penal institutions.

8.6% proved satisfactory on outside treatment, while 15.7% were from the first regarded by the court as inside cases, needing detention rather than outside probation.

Correlated very closely with these facts are those of their industrial efficiency.

TABLE OF INDUSTRIAL EFFICIENCY.

REGULARLY EMPLOYED.	IRREGULARLY EMPLOYED.	ODD JOBS.	NOT WORKING AT ALL.	HOUSEWORK AT HOME.	TOTAL.
5	19	14	30	2	70
or	or	or	or	or	or
7.1%	27.1%	20%	43%	2.8%	100%

65.8% of these cases, or practically two-thirds, could not be considered self-supporting.

One may very well object that these facts are fairly well known; the failure in industrial efficiency, the unprofitableness of ordinary methods of treatment, the poor showing on probation—these facts are common knowledge and our only excuse for presenting them here is for the purpose of correlating them with such fundamental and underlying causes of these conditions as are found within the individuals themselves.

TABLE OF PHYSICAL FINDINGS.

Chronic bronchitis	3
Tuberculosis	8
Serious physical impairment from drugs	36
Venereal disease	23
Heart disease	3
Chronic rhinitis	3
Tape worm	1
Abscess in throat	1
Sciatica	1
Pelvic disease, other than venereal	4
Asthma	3
Thyroid disease	1

The industrial inefficiency above referred to may very well find an adequate explanation in such physical conditions. But more important still are the mental data. It is here we shall find the most satisfactory answer to the question as to why the drug addict's problem is not solved by merely getting him off the drug; why sure cures do not cure; and why short periods of treatment are so futile.

The application of mental tests to these individuals gave the following levels of intelligence:—

TABLE OF MENTAL LEVEL.

9 TO 10 YRS.	10 TO 11 YRS.	11 TO 12 YRS.	SUB-NORMAL.	ADULT
12	13	13	18	14
or	or	or	or	or
17.3%	18.5%	18.5%	25.7%	20%

54.3% had a mental level below 12 years; 45.7% above 12 years. Such facts find their fullest significance in the following table of diagnosis:—

TABLE OF MENTAL CLASSIFICATION.

FREELY-MINDED.	SUB-NORMAL MENTALITY.	PSYCHOPATHIC PERSONALITY.	EPILEPT.	NORMAL INTEL- LIGENCE IN ADULT YEARS.	DRUG DETERIOR- ATION.	DRUG PSYCHO- SIS.
20	14	10	1	13	10	2
or	or	or	or	or	or	or
28.5%	20%	14.3%	1.5%	18.5%	14.3%	2.8%

81.5% suffered from some form of mental handicap. Either, on the one hand, definite deterioration or disease from drugs, or, on the other hand, mental defect and such prior to the use of drugs.

Is it any wonder, observing in such a large proportion of cases an innate mental weakness, a mentality that is defective and poorly balanced, or a psychopathic personality, that we find these individuals unable to combat the enslaving effects of narcotic drugs?

If 64.2% of drug users have definitely abnormal mentality prior to their use of drugs, then we have something of far more importance to consider in treating these cases than merely the symptoms of drug abstinence and bad environment.

Most important of all is to be taken into consideration the mentality of the individual and his ability to resist.

In the light of the above findings, we can more easily understand the basis of Reuben's statement that "those who have to treat addicts appreciate the futility of relying wholly on the innumerable pharmaceutical remedies so widely and variedly employed in combating the narcotic drug habit. Successful treatment does not end with discharge from hospital. The real struggle only begins at this stage."

And this is true, because in two-thirds of the cases we are dealing not with normal individuals, but with individuals whose minds are sub-standard, unstable, and poorly balanced.

Reuben very wisely says "one can see the hopelessness of attempting to treat narcotic drug addiction in private practice, especially while the patient is free to enjoy any quantity of drug he may desire, regardless of his physician's instructions. The honest physician should not undertake to treat such cases under such conditions."

SUMMARY.

The drug habitué in court is a more or less delinquent individual, appearing frequently because of larceny, offenses against chastity, and such. If put on outside probation, two-thirds of these individuals have either to be surrendered to the court or put in non-penal institutions. Two-thirds of the cases above studied

were not supporting themselves by legitimate means, suffered from physical conditions that greatly impaired their industrial efficiency and handicapped them in any fight they may have wished to wage against the enslaving effects of narcotic drugs.

81.5% showed some form of mental defect, psychopathic personality, or mental impairment from drugs, which in terms of will power meant impaired ability to resist.

In the light of the foregoing facts, we can understand why medicinal preparations alone do not cure; why short periods of treatment are so often futile.

In the light of the foregoing facts, we can question the wisdom of undertaking disposition or treatment of any drug case without determining beforehand his individual ability to profit thereby.

Further, we can strongly advise against trusting a drug user to cure himself, or expecting satisfactory results from any method that does not provide for prolonged detention, careful physical and mental rehabilitation, and upon discharge, well-directed medical and social service methods of treatment.

SHIFTLING, CHARLATAN AND VAGABOND: WHO THEY ARE AND HOW THEY ARISE.*

BY J. VICTOR HABERMANN, A.B., M.D., D.M.S. (BERLIN),
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ogy, Vanderbilt Clinic, New York City.*

AN interesting group of abnormals, found the whole world over, as commonplace as the sparrow and quite as drab and unattractive—unless one focus with special sentiment upon him—is the truant, shiftling and tramp, the good-for-nothing or “bum,” the swindler, rogue, pathological liar or charlatan, and last, but not least, the vagabond (mendicant, peddler, mountebank, etc., falling for the most part into the rubric of the latter). These individuals have a strange kinship among themselves, and a distinct relation, either remotely or intimately, with the problems of delinquency and crime—and their study leads into one of the most fascinating highways of psychopathology and psychopathically engendered wrong, with byways into alluring fields of story and romance.

Who are they, how do they arise, and how do they transmit? Are their offspring like themselves? Does the truant, for instance, who

becomes the good-for-nothing shiftling, have shiftlings for children?

The real truant, to begin with, is the psychopathic child who suddenly “runs away,” mostly not knowing why, overcome by an acute inner *impellence* to “go,” to “shift somewhere,” to be “off in the open.” He not only cuts school, he strays from home. After we eliminate the epileptic and hysterical fugues (*automatisme ambulatoire*) we still have a large class of such dromomanics to deal with* in whom a strange nomadic unrest is rife and latent, and in whom some simple provocation (pique, quarrel or even less) sets off an intense dysphoria that starts the process going. They may or may not return; but one thing is certain, they will soon “hie hence” again. Such lives are not infrequently spent in constant aimless wanderings.

These, then, are the later shiftlings who stick to nothing, who are chronically dissatisfied, who can never attain enough stability to achieve anything—a trade, a livelihood, an ambition, a home and family. They just shift. One finds them among both the ignorant and the intelligent (many of the *instables* and *déséquilibrés* of the French belonging here). Among the women not a few are finally found in the ranks of prostitution. This condition must not be considered an entity, but just a manifestation of psychopathy, with lability of mood, and the proneness to dissatisfaction (dysphoria) as the most prominent characteristics. Should there be children, the hereditary transmission is that of psychopathy, mild or severe.

The good-for-nothing† (corner loafer, gadabout, bum, etc.) is another type found wherever earth is travelled over, who through an inferiority in moral make-up, a lack of cortical “backbone,” as it were, is utterly unable to maintain himself in even the most elementary trappings as a member of a community. He is wanting in self-esteem and honor, and hence can awaken no regard in others. What you or “society” may think of his appearance or deportment does not concern him. The opprobrium attached to failure, to not-getting-on, to the complete disregard of paying debts, to laziness, tatters, filth, leaves him quite untouched. He is *characterless*. With special nicety one may say of such an individual that he has no *respectability*,—no one respects him. This is the “Lump” of the Germans, our nearest equivalent being probably “bum” (with a slightly

* This is the third of a series of studies on heredity (in its relation to psychopathy, clinical psychology and criminology) and the differentiation of abnormal types of character and personality. For the general discussion, see *Medical Record*, Feb. 24, 1917; for the study of the degenerate, etc., see *The Archives of Diagnosis*, April-May, 1917.

* See A. Pick, “Ueber einige bedeutsame Psycho-Neurosen des Kindesalters,” Halle, 1904. Pick speaks of the condition as arising out of the soil of “Psychasthenia.” He does not, however, mean the psychasthenia of Janet, but constitutional psychopathy. See Ziehen’s studies of the Psychopathic Constitution; also the author’s paper (Med. Review of Reviews, March, 1912) and literature therein cited. See also the monograph of E. Stier, “Wandertrieb und Pathologisches Fortlaufen bei Kindern,” Jena, 1913; part iv of A. Culler’s “Les frontières de la folie,” Paris, 1889; B. Maurice’s “Les fous chez les enfants,” Paris, 1900; Hermann Müller’s “Vom Wandertrieb,” *Zeit. f. d. Erforsch. und Behand. des jugend. Schwach.* Bd. v, 1912; Heilbronner, “Über Begabung,” *Jahr. f. Psychiatrie*, 1903.

† See the chapter “Lumpen, Bummler und Vagabunden” in Pelman’s “Psychische Grenzzustände,” Bonn, 1912. Many interesting facts will also be found in Jacob Riis’ “How the Other Half Lives,” 1890.

different shading). *He will not work.** He sees no need of earning or saving, or indeed of possessing anything. He shuffles passively through life, eking out his miserable existence through borrowing, begging and taking.†

But even for this poor mortal it may at times become difficult to keep life and limb together, and, *not being constituted for work*, his appropriation assumes more formidable proportions—he steals. This practice may then become common habit. Need and chance accident may even lead to felony and murder. Here we have a special type of delinquency and especial *genre* of criminal to keep in mind.‡

The same good-for-nothing may, oddly enough, have a tendency to venerate his ill-fame in quilted colors. He tells wild-goose tales of escapades, and puts point and effect to the meanest matter. Thus we get the conventional braggard and liar—a character of all times. Though quite callous to his real condition, he nevertheless tries to play a part in the eyes of others. With a little better intelligence we have the swindler and charlatan. The lying of these individuals is frequently of a peculiar kind, a mingling of small fact with abundant fancy (confabulation) and an added inking to credulity in their own fabrications, even a tendency at times to pose as the actual of a highly fictitious part (*pseudologia phantastica* or pathological lying).§ It must always be remembered that this lying does not count for lying in such abnormal minds—it is really believed. The Korsakoff psychosis also confabulates, though in a somewhat dissimilar way, falsifying monstrously, and, even though you point out the discrepancies, remains quite unconcerned.

The names of Daudet, Immermann, etc., in our footnote take us quite some distance from the theme of "good-for-nothing," and lead over an interesting association bridge—the one terminal in story, the other in fact—to such characters in actual life who are surely "good-for-much," yet abnormal, exotic, *different*, who live hazy, mystic lives, half in the fiction of their own dreaming, and no little determined by really pathologic trends. Here we think of Shelley, Coleridge, DeQuincey, Verlaine, of poor

* This recalcitrance to work is also found in families of "high degree" who are far too proud to work (but not to borrow and accept), who, though their houses have long since fallen into dilapidation, still stick to their pride, their hauteur and their traditions. Nor have they usually any great anxiety about paying their debts. Very probably we get our phrases "trumpet baron," "shoddy aristocrat," etc., from these types.

† Such types begin their careers very early in life, do not remain at school, are then tried at work, but cannot stick, soon take no more jobs, and "hang around" and deteriorate. Sometimes childhood and early adult life starts apparently fairly well, but drink rapidly demoralizes this individual. Most have very scant schooling, but must not be considered innately feeble-minded.

‡ This type, it should be remembered, is really not a criminal type in the strictest sense. These are passive individuals, never active seekers for trouble.

§ See "Die Pathologische Lüge und die Psychisabnormen Schwindler," Anton Delbrück, Stuttgart, 1801; also chapter I of O. Hinrichsen's "Zur Psychologie und Psychopathologie des Diebstahls," Wiesbaden, 1911. A. McLane Hamilton reported an extremely interesting case in the Medical Record, vol. lxvii, p. 905. Splendid examples in literature are Daudet's "Tartarin de Tarascon," Immermann's inimitable "Münchhausen," and Keller's "Der Grüne Heinrich." Ibsen's "Peer Gynt" probably also belongs here.

Chatterton and probably of our unhappy Poe, of visionaries like Blake, Swedenborg and Newman, and a list of hundreds of others, had we a peep into all the master souls. The strange mental motley of these higher typed individuals, the sincerity of whom we do not question, should teach us to be fairminded enough to weigh, and likewise accept as sincere the unusual combinations in the lower types as we see them, to endeavor to understand through *appreciation* rather than criticism, for appreciative analysis gives a fairer picture here than the critical. *Humani nihil a me alienum puto.* This might be our motto in deciphering and judging all the abnormals, good, bad and indifferent, high typed or low typed, brought before us. After all, there is a good bit of the fictitious even in much that we cherish as truth in our own minds—we supposed normals—and many of our plans, our dreams and our desires are more real for us, and more in keeping with our mental status than the soberest of our come-ture realities.

The common vagabond is more than mere shifting. This class (again a very extensive world-class) is made up of physical and mental derelicts—usually both feeble-minded and psychopathic. Of 404 such chronic vagabonds (*gewöhnheitsmässige Landstreichern*) studied by Bonhöffer¹, 74% had to be called mentally abnormal, and at least 53% feeble-minded; 60% were chronic alcoholics, and quite a number epileptics. According to Ziehen² at least 30% are "hereditary degenerative psychopathic constitutions." "This vagabondage," writes Pelmann, "is the great reservoir out of which delinquency is resourced." Real criminals, however, are rare among them; they haven't the energy for this. As to the heritable transmissibility in these cases, it will be seen, this may be a rather complicated affair.

The above pathological forms in varying combinations, especially with the admixture of intelligence or even talent or genius, give us some of the most interesting characters we happen upon in life and fiction. From this class come all our picaresque heroes of romance,* from Cervantes' "Don Quixote," Grimmelshausen's "Simplicissimus," Lesage's "Gil Blas," through the well-known characters drawn by a score of England's gypsy souls†—Defoe, Smollett, Scott, Borrow, Stevenson—to mention but a few—up to our more modern "beloved vagabonds" of Lock, R. H. Davis, Weir Mitchell and others. The vagabond has been perhaps the romantic top-notch of the group, but he has been only one of the many types out of rascaldom literarily portrayed for us. How near to human interest of today these types come one only recog-

* See, for instance, Chandler's "Romances of Roguery," Part I, MacMillan & Co., also "The Literature of Roguery," in two volumes, Houghton, Mifflin & Co., 1907; also "Elizabethan Rogues and Vagabonds and their Representation in Contemporary Literature," F. Aydelotte, The Clarendon Press, Oxford, 1913.

† And England has been especially rich in these—Spain, however, having supplied the source and the beginning.

nizes when one thinks of the fame of "Raffles" and of "Sherlock Holmes" (to say nothing of Nick Carter!), and of the stage popularity of crime and detection, and the abnormal. Indeed, these elements of unrest, psychopathy, vagrancy, and the soon encountered company of poverty, uncleanness, immoderation and social disrectitude upon which we righteous look with such sorry contempt, are all more deeply ingrained in the world's history—and our own natures—than we are usually aware. They are the secrets behind those great movements of the crusades (the children's crusade proved it), the Elizabethan and post-Elizabethan voyages and wanderings, the rush to the Klondike and our West; and out of these same elements sprang the Goliardi or itinerant students of the middle ages—that strange confraternity of the open road (*Socias sanctae confratiae*) and forerunner of the modern university! In spite of their learning, these scandalous students, were they here today, would be considered as out-lawed to a community, as the men of Coxey's army, all of them candidates for prison internships, with a goodly overflow for the hospital and madhouse.*

It is perhaps not very far-fetched, after all, to say that we are, most of us, of the same stuff the other fellow's made of, only it is quantity, not quality, in the arrangement of the make-up that characterizes one from the other.

REFERENCES.

¹ Beiträge zur Kenntnis des grossstädtischen Bettel- und Vagabundentums. Berlin, 1900. See also Mönkemüller's "Eine Vagabundenfamilie," Monat. f. Kriminalpsych., 1907, and Wilmann's "Zur Psychopathologie des Landstreichers," Brat, Leipzig, 1906; also "Psychosen des Landstreichers," Zeit. f. Nerven. u. Psych., 1904.

² Psychiatrie, Leipzig, 1908, p. 578.

CONCERNING THE END-RESULTS OF TREATMENT OF FRACTURE OF THE ELBOW.

BY HAROLD NEUHOF, M.D., NEW YORK CITY,
AND
HEINRICH FRANZ WOLF, M.D., NEW YORK CITY.

Of the various fields of surgical therapy the treatment of fractures has made the least advances in recent years. Therefore, in believing that something has been added in the effort to aid in clarifying present day views of fracture treatment, one is apt to cling tenaciously to, and to defend vigorously, such a notion. Certainly if the question appears of some importance, its defence by detailed argument is quite justifiable. Hence we believe that no further explanations are necessary if we take up and attempt to refute certain statements made by Ladd¹ con-

cerning our observations² of the end-results of the treatment of elbow fractures. If, as a corollary, we bring home the basic importance of accurate observation and related logical thinking, our second purpose in this presentation shall have been fulfilled.

In the first place, the meaning of end-result should be clearly understood. Much of the confusion that exists is undoubtedly due to the faulty use of terms. With Ashhurst and others we have defined a perfect end-result, in elbow fractures, as "one in which the full and normal range of motion is a sequel of the treatment of a fracture of the elbow. Anything short of this is termed an imperfect result. The latter may vary from a slight varus or valgus deformity and very little limitation of motion to marked change in the carrying angle and great limitation of motion." We wish to make an urgent plea for an absolutely strict adherence to these terms. As soon as individual interpretation of what one means by "a useful arm," "a good result," etc., comes into play, all standardization is lost, no two observers mean the same thing, progress—depending as it does in large part upon interchange and correlation of opinion and observation—is blocked. Therefore we feel that Ladd's view is fundamentally incorrect in the statement: "A decrease in the range of motion or a positional deflection which requires special examination for its detection is treated as negligible, which for all practical purposes is correct." We will not take issue with the question of "practical purposes," although one may mention in passing that what may be considered a "perfect arm" for a bricklayer need not necessarily be so for a violinist, for example. It is clear that we or any other critical readers of Ladd's contribution are at once put entirely at sea in an effort to learn if, in fact, his results are better than those obtained by others, if, therefore, his plan of treatment should be followed. When he states that in "slightly more than 91% of the (45 traced) cases a perfect arm has been secured," that statement should speak most strongly for his method of treatment. Since, however, it is not clear whether or not there were slight imperfections in some of those arms, one finds it quite impossible to ascertain the significance of such observations. We need only mention that Ladd terms "perfect" two of four (operative) cases in which slight valgus resulted. We have not attempted to estimate, and no one but Ladd can say what the percentage of perfect results would be if he had adhered to an objective rather than to a personal interpretation of end results, although it is evident the percentage would not be so high.

Put in another way, the foregoing part of the discussion demonstrates that if results of treatment are to be recorded, if we are to learn how to treat fractures correctly, it is absolutely essential that there be universal agreement upon a uniform classification, based upon an objective,

* See the introduction to the translation of the *Carmina Burana* by John Addington Symonds, under title of "Wine, Women and Song," and the songs themselves. Th. B. Mosher Co., Portland, Me., 1899; also the reprinted (1849) "The Fraternity of Vagabonds" by Awdeley, "A Sermon in Praise of Thieves and Thievery," by Hales, and "A Caveat or Warning for Common Cursetors," by Harmon, all three in one volume, Trubner & Co., London, MDCCCLXIX.

not a personal, interpretation of results. Turning to Ladd's criticisms of our observations, we wish to take them up one by one.

"The Neuhof and Wolf cases do not appear to me to establish the value of early mobilization and massage, and there is no small amount of intrinsic evidence in the study of their unsuccessful cases that callus is, at times, increased by the treatment. Their successful cases seem to be the result of proper reduction and immobilization in the Jones' position rather than the result of after treatment." We reported 95.5% of objectively perfect results (22 of 23 cases) when fractured elbows were treated by combining immobilization in hyperflexion with early passive movements and massage. With that same rigid classification, the best previous figures were given by Ashhurst, who immobilized in hyperflexion for several weeks and did not employ massage and mobilization. His percentage of perfect results was 81. Before the systematic use of hyperflexion, the average of perfect results reported by careful observers of large groups of cases was 23.25%. Therefore, since our figures are not doubted by Ladd, we have established the value of early mobilization and massage for elbow fractures, when combined with the hyperflexed posture.

We have carefully rescrutinized our cases to determine if there is any "intrinsic evidence" that callus is increased by passive movements and massage. The question of increased callus during the course of such treatment is an open one, according to many observers, but need not concern us here, for Ladd is referring to excessive callus at the time that observations of end-results are made. In none of our cases in which hyperflexion was combined with early massage and mobilization was there any evidence of excessive callus, nor do our notes in any way indicate it. Therefore it is impossible to see upon what Ladd bases his statement. We agree with Ladd and have clearly shown that hyperflexion and proper reduction are most important in the result, but we have also demonstrated the importance of after-treatment. Concerning the question of "proper reduction" our series of cases demonstrates that perfect results were obtained in a few cases in which reduction was incomplete, and in a few in which proper reduction was manifestly impossible owing to extensive comminution.

"To prove their contention they should present cases put up in acute flexion, after proper reduction, not having early massage and passive motion and giving poor results. This they fail

to do, and I have failed to find that such is the case from a fairly careful review of the literature, or from our experience." We do state, that "before combining mobilization and massage with hyperflexion, a series of elbow fractures were treated by hyperflexion alone, that the results were more satisfactory than those obtained by fixation in other positions, but by no means entirely satisfactory." But is it necessary to prove this when Ashhurst had already done so and obtained only 81% of perfect results in a very large series of cases? Surely to doom two out of every 10 children (elbow fracture is chiefly an injury of childhood) to go through life with an imperfection of an arm, be it ever so slight, cannot be deemed the last word in the treatment of elbow fractures. Concerning Ladd's personal experiences we have already stated that his percentage of perfect results cannot be determined from his report.

"The high proportion of failure in their cases as a whole, 53%, may be ascribed partly to the fact that many cases were referred late after having been improperly reduced, or immobilized, by other surgeons, and possibly to unusually great deformity." In the first place, we consider it most inaccurate to refer to the high proportion of "failure." What is generally understood by failure is a very poor result,—ankylosis, great deformity of the carrying angle, or excessive limitation in the range of motion. Ladd will certainly agree that a perusal of our cases reveals very few failures in this sense. He no doubt meant to refer to imperfect results. The percentage of these imperfect results was 47, and not 53, as stated by Ladd. The displacement of fragments in our series of 100 cases naturally varied within the wide limits of any such large series of cases, so that it cannot be thought that the deformities were unusually great in the series as a whole. Nor can "improper reduction" be offered as the common cause for imperfect results, as an analysis of our case-histories will demonstrate; for our study proves that prolonged immobilization in correct position, or short periods of fixation in incorrect position—even with adequate reduction—also yield a considerable proportion of the imperfect results.

"A comparison of the perfect and imperfect results shows that the imperfect cases equal or exceed the perfect cases upon mobilization and massage treatment in all groups except the one in which, in addition to the advantage of the Jones' position of hyperflexion, the cases pre-

		PERFECT RESULTS WITH MODERATE TO MARKED DISPLACEMENT	PERFECT RESULTS WITH SLIGHT TO NO DISPLACEMENT
Hyperflexion	Early mobilization and massage	92.3% (13 cases)	100.0% (10 cases)
No hyperflexion	Early mobilization and massage	40.0% (10 cases)	63.6% (22 cases)
No hyperflexion	Late mobilization and massage	12.5% (8 cases)	38.5% (13 cases)

sented in general slight displacements, generally posterior." To refute the last part of this statement and to make a final attempt to establish the significance of hyperflexion combined with early passive movements and massage, we will conclude with the following table. It contains those cases in which the histories detailed in our paper stated if displacements were "moderate" to "marked," or "slight" to none. The cases in which the type of displacement is not definitely indicated or is not mentioned, and the small group of ulna fractures, in which hyperflexion is not in question, are excluded. We regret that such a table, based on the question of relation of extent of displacement to results obtained, did not appear in our paper. We are glad to have the opportunity to present it in this place.

REFERENCES.

- ¹ Ladd, W. E.: BOSTON MEDICAL AND SURGICAL JOURNAL, Aug. 17, 1916.
- ² Neuhof, H., and Wolf, H. F.: Surgery, Gynecology and Obstetrics, March, 1915.

Memorial Addresses.*

EDWARD MARSHALL BUCKINGHAM, M. D.

By GEORGE W. GAY, M.D., BOSTON.

For more than seventy years the Drs. Buckingham, father and son, have occupied a prominent position in the medical profession in New England. They came from an intellectual stock whose members had that sterling character and strong personality that gave them an influence in this community for upwards of a century.

Joseph T. Buckingham, the grandfather of the subject of this sketch, was the well known editor and proprietor of the *Boston Courier and New England Magazine* in the earlier part of the last century. He had thirteen children, ten of them being boys. Of the five who came to manhood, two entered the ministry, one became a prominent lawyer in Chicago, one a linguist and teacher in the English High School and the other was the distinguished physician so highly esteemed by the generation now fast passing away. A few words in relation to the career of the latter may not be amiss upon this occasion.

Charles Edward Buckingham, the son of Joseph T., was born in Boston in 1821 and died in 1877. He graduated A. B. at Harvard College in 1840 and M. D. in 1844. He at once took an active part in affairs. He was one of the organizers of and professors in the Boylston Medical School. Later he became a lecturer in the Harvard Medical School and in 1868 was made Professor of Obstetrics and Medical Jurisprudence in that institution, a position that he occupied the remainder of his life. He was active in the reorganization of this school in the early 70's, an event that had so much to do in elevating the

standard of medical education in this country. He also assisted in establishing the Massachusetts State Board of Health and the Boston Medical Library. He rendered valuable service to the BOSTON MEDICAL AND SURGICAL JOURNAL at a critical period of its existence. He was a member of the original surgical staff of the Boston City Hospital, later consulting surgeon to that institution, Consulting Physician of the Boston Lying-in Hospital, a Fellow of the London Obstetrical Society and member of numerous other societies and organizations.

To young practitioners he was kindness and consideration personified. His generosity eased many a young physician's pay day. Socially he was an ideal companion. Stimulating, alert, resourceful, one never left his presence without having received useful hints and renewed interest in his work. Upon one occasion the writer consulted him in relation to an obscure affection of a young lady's ankle. After hearing the story, he quietly went to his bookcase and taking down Sir Benjamin Brodie's work on hysterical joints, said, "Take that book home, doctor, and look it over. I think it will help you." From that day to this, now nearly half a century, the writer has never failed to recognize a neurotic joint. He was an admirable practitioner and a brilliant clinician with an abiding faith in certain drugs, of which the chief was opium. He had no superior and few equals in the use of that prince of remedies. When the clinical thermometer was little more than a crude and expensive curiosity, Dr. Buckingham said, "sometime, by and by, this will come of use and be adopted." He did his share in bringing about this result. He was, indeed, a rare man; brusque, forceful, positive, yet gentle, considerate, and kindly to the rich and poor alike. That his patients idolized him is shown by the fact that they erected a beautiful monument to his memory in Mount Auburn.

Such, in brief, was the heredity of Edward Marshall Buckingham. He was the only son in a family of three children of Charles Edward and Mary Elizabeth (Marshall) Buckingham and was born in Beech Street, Boston, on August 9, 1848. He was educated in the public and private schools of his native city and entered the Massachusetts Institute of Technology in the class of 1870. Having taken a course in civil engineering and done some surveying, he was seized with pneumonia, which interrupted his career in that direction. He then, much to his father's delight, entered the Harvard Medical School. Graduating in 1874, he served for a time as house surgical pupil at the Massachusetts General Hospital, then went to Vienna for a year's study. Upon his return home he found his father a semi-invalid from a serious cardiac affection and his large practice slowly being scattered. Dr. Buckingham settled at the South End, near his father, and went to work with vigor and determination. His first public service was

* Read before the Boston Society for Medical Improvement, Jan. 20, 1917.

at the Boston Dispensary, to be followed by work in many other institutions. During his entire professional life he did a great deal of charity work. He was visiting physician at the City Hospital and for several years was the efficient secretary of the staff. He was also visiting physician at the Children's Hospital, in fact he paid special attention to diseases of children throughout his career.

He wrote numerous articles for the medical journals and the City Hospital reports, among which may be mentioned, Influenza, Difficult Dentition, Malaria in Children, Tropical Diseases, the Communicability of Cerebro-Spinal Meningitis, Gastric and Duodenal Ulcers, and the Protection of Milk. His papers were vigorous, positive and frank. Like his father, he had an impressive manner of saying, "I don't know!" It inspired a confidence in his honesty. He told the plain truth, as he understood it, regardless of accepted theories, and was ready to defend his opinions. He was a progressive conservative. As Dr. Post has well said: "He was a keen critic; often considered a conservative, but always receptive of new ideas, which he usually received with some modifications of his own."

Like his father, he was an excellent family practitioner; alert, faithful, candid. "He saw with his own eyes, listened with his own ears, felt with his own hands and was the disciple of no man." Quick to call assistance in cases that were serious, or that he did not understand. He never forgot the personal equation in his practice. His patients were not only "cases," but they were persons like himself, meriting careful consideration in all directions. He did not send patients with limited means to Palm Beach, nor order a course of treatment that he knew they could not afford. He supplied many poor people with medicine and other necessities at his own expense. Their needs were his first consideration. He was a thoroughly conscientious, self-sacrificing physician who won the confidence and esteem of all with whom he came in contact.

As might be supposed, Dr. Buckingham belonged to several medical associations and was a constant attendant upon the meetings, often serving as secretary, or in some other capacity. He was a member of the American Medical Association, Massachusetts Medical Society, Boston Society for Medical Improvement, etc. He was vice-president of the American Pediatric Society and president of the New England Pediatric Society. For twenty years he held the responsible position of treasurer of the Massachusetts Medical Society to the satisfaction of its 3,600 members. Prompt, efficient, reliable, ever watchful of the Society's interests, his vacancy will not be easily filled. His service merits the lasting appreciation of the Society.

Dr. Buckingham was an omnivorous reader, preferring that recreation to almost any other pastime. He was especially fond of history and was well versed in American history. He

studied it with his children not only for the facts recorded, but also for the purpose of ascertaining the trend of affairs. He was blessed with a fine memory and his historical studies made him unusually accomplished in that direction. He was also a constant reader of fiction. He was fond of martial music, but cared little for any other sort. While not a member of any military organization, yet he was much interested in military tactics from early boyhood throughout his entire life. There was nothing of the sportsman about him. He was particularly fond of the mountains and spent his vacations among them so far as possible. The Presidential Range had peculiar attractions for him. He met the same friends there year after year and spent some of his happiest days roaming over that region.

Dr. Buckingham's early choice of a technical training very likely may account for his great and abiding interest in the railroad problems of this country. He was particularly well versed in these matters. He made a study of the subject. He knew the history, the growth, the mergers, the combinations of the principal lines and was also posted as to routes, connections, etc. As might be expected, his studies gave him no confidence in government ownership of these corporations.

In December, 1876, Dr. Buckingham married Miss Alice Darracott, daughter of Joseph and Sarah C. (Darracott) Nason of New York. The doctor was essentially domestic in his tastes and his home life was an unusually happy one. He is survived by his widow and two daughters, Miss Edith Nason and Margaret, wife of Professor Addison Gulick of the University of Missouri at Columbia, Mo.

About five years ago Dr. Buckingham began to have slight attacks of angina. They consisted of the characteristic "breast pang" and numbness of the left arm. They recurred three or four times each year, but lasted only a few moments. He said nothing to any one about the matter, but kept about his usual duties until a short time before his death, when he was seized with a severe attack which was relieved by hypodermic morphia. A few hours later, however, while resting comfortably, the heart suddenly stopped and all was over. His remains, like those of several other prominent physicians who have recently passed away, were cremated and rest at Mt. Auburn.

The following quotation from the Talmud, taken from the doctor's book of medical notes of 1879, may well close this imperfect sketch of a noble life.

"The day is short, and work is great; the reward is also great, and the Master presses. It is not incumbent on thee to complete the work, but thou must not therefore cease from it."

DR. WALTER JAMES DODD.

By C. A. PORTER, M.D., BOSTON.

In 1892 there came to the Massachusetts General Hospital a young man, Walter Dodd by name, to fill the position of assistant apothecary. Born in London, he came here at the age of nine to live with relatives in Somerville. A few years of schooling, a few more years with the Oriental Tea Company, and then a desire to go to sea possessed him. But after a talk with Ex-president Eliot, who was attracted by his modesty and quality, he decided to study chemistry at Harvard under Professors Jackson and Hill.

Last December, a little before Christmas, Dr. Walter Dodd died in his own house on Marlborough street, more respected and more beloved than any other member of the staff.

During his first years at the hospital he was interested in photography and all the house officers and others are indebted to him for pleasant reminiscences of the old place and old times. His knowledge of chemistry and drugs, combined with his invariable good nature, made him an invaluable consultant. For example, I remember a particularly clever neurotic morphine addict who had been treated before and knew valarian when she smelled it. After several attempts Mr. Dodd invented a combination which completely deceived her and to this day is lost to medical art.

In 1896, the year of Roentgen's discovery, he had been appointed apothecary and photographer to the hospital. With his friend, Dr. Codman, he began work in March with a large static machine borrowed from the Neurological Department. In October he acquired a powerful 12-inch induction coil. After his regular duties were finished he literally burnt the midnight ray working enthusiastically all his spare time, utterly ignorant of any danger, until in November the rays burnt him. Immediately after his recovery he was again at work until in April, 1897, a severe general dermatitis with excruciating pain forced him to lay off. In July, at his suggestion, the first graft was applied to a chronic ulcer on the left forefinger. The operation was successful and was followed by immediate relief from pain. Within a month Mr. Joseph Godsoe, then assistant apothecary, recalls him, both hands in splints, working all night in the old Kingsley Studio in a temperature of 110°, with a cake of ice in the developing fluid to keep the films from leaving the glass. When morning came both men were in the apothecary shop as usual, performing their routine work and awaiting evening to return to the x-rays.

Many operations followed in spite of which Mr. Dodd kept continuously at work. In December, 1901, the whole surgical staff joined in giving him an engraved gold watch and chain as a slight acknowledgment of his devoted sacrifices. His rare pleasure on receiving this unexpected

token was good to see and to remember. In 1902 malignant disease first appeared, requiring amputation of two fingers, followed by a dozen more operations in the next three years. As an illustration of the grave humor of the man I shall always remember him one morning in May, 1905, coming down the hospital corridor with his characteristic gait, and an unusually happy smile on his face. He asked me whether I noticed anything queer about him. I said: "No." "Don't you see that I have had both hands in my trousers pockets and not a dressing on either?" It was the first time in eight years that he had been able to do this.

In 1908 he received his decree from the Vermont Medical College, immediately followed by his appointment as Roentgenologist to the hospital, and in 1909, instructor at the Harvard Medical School. In the meantime the work of his department was increasing almost beyond bounds. To bone and foreign-body work was added the therapeutic use of the x-ray. Then came bismuth and collargol injections with all that these have meant in diagnosis to medicine and surgery. In spite of loyal assistants working overtime, the x-ray department had hard work to keep up with the routine demands. If anybody wished to see a plate, give a lecture, or show lantern slides, Dr. Dodd was always ready with the material, and in spite of his mutilations, frequently arranged things with his own hands. These increasing deformities, combined with a naturally shy disposition and unwillingness to ask help from others, made him avoid society and any amusement outside of the hospital. Finally a friend insisted upon taking him out to dine, and himself wore gloves. This broke the ice and from now on his really social nature had opportunity to expand. His love for singing and natural talents as an actor made him unusually popular with the house-officers and at all of the gatherings of the Massachusetts General Hospital Alumni. He was noted for his stories at all times and places which were full of kindly wit, playing, like heat lightning, about the vagaries of human nature.

In 1909, after consultation with friends, he determined to open a private x-ray plant at 259 Beacon Street with Dr. Arial George. In 1910 he married Margaret Lea, and for the first time was thoroughly happy. His practice increased, he spent the summers at Point Allerton where it was his pleasure, after long years of institution work, to entertain his friends. His devotion to young Burnham Porter grew with years, and many happy days did the boy have helping Dodd work in his garden and wondering at what he accomplished with his grey-gloved hands.

When war was declared Dr. Dodd, an Englishman, was eager to help. The first Harvard Unit, for which he was to act as Roentgenologist, was to sail in June, 1915. A severe operation on the hand with an axillary dissection, would have deterred most men from any idea of this trip, but

Dr. Dodd, accompanied by his wife, with wounds unhealed, arrived in an ambulance at the train and planned to convalesce from the operation on the ocean and while on service in France. The character of his work and his qualities while on duty, Dr. Roger Lee will describe.

Upon his return in October, 1915, his general condition was better than it had ever been. He had served a cause that he loved, had made himself popular with patients and doctors alike, and in a characteristic way had picked up more knowledge and more anecdotes than any other member of the unit. During the beginning of 1916 he was very well and making plans to purchase a house, and by further division of labor to enlarge his usefulness and commence some writing. In the summer a sudden infection with chills developed and the epitrochlear and axillary glands quickly enlarged. He lost weight and had continuous fever. In spite of this he purchased his house. In August a gland at the elbow was removed and found infected both with pus and cancer. A very thorough dissection of the axilla followed, from which, for the first time he showed little tendency to react. There developed a persistent and racking cough which could not be explained, though all, including himself, feared metastases. In November it became clear that both lungs were involved. During the last days of his illness he was always thinking of others, would brighten up to see a friend or tell a story, but for the most part was dreaming in a mild delirium of past incidents in his life and the happy days in France. There was ever a meaning in these wanderings, though often his wife and friends did not understand. With a whimsical smile he would frequently correct some misuse of words or flighty ideas. On December 16th he died, having, in his short life, accomplished all that makes life worth living. Through pain and suffering he had forgotten himself and thought only of his work. He had become an authority, his unbiased conservative opinions carried conviction. In the medical societies he rarely spoke, but when he did, all listened. He had been loyal to the hospital; his wife looked after him with devoted care; he had hosts of friends. In his own calm, serene way he had shown us that pain and operations were mere incidents. He has taught us how to live and how to die.

Before a recent operation he wrote a will giving \$100 to start an endowment fund for the x-ray department. These were his words:—"With the hope that others who can afford more will give according to their means."

WALTER DODD IN FRANCE IN 1915.

By ROGER I. LEE, M.D., CAMBRIDGE, MASS.

ONE morning in the spring of 1915, Walter Dodd hunted me up at the hospital and said he wanted to have an important talk with me. He had just heard about the Harvard Unit and was

fired with enthusiasm to go with the unit and to be of service to the afflicted in Europe. He felt he might have to be looked after a little and hoped in case of need Dr. Porter and I would consent to do what he termed "that great favor." But the real problem to him and concerning which he wanted advice was whether in my opinion his presence might inconvenience the unit on account of the possible extension of the disease while he was abroad. Very calmly and quietly he talked of the inevitable outcome. He had accepted that. To his mind the sole consideration was that the occurrence of the inevitable outcome should not in any way handicap the work of the unit. I attempted to put forth my own point of view, that if ever a man was entitled to the comforts of home he was that man. Since it was quite uncertain where the Harvard Unit would be or under what conditions it would live, it was unnecessary for Walter Dodd to exchange the well deserved comforts of his home for the possible hardships and possible overwork in behalf of any cause, no matter how good. However, Walter abruptly ended that particular argument by saying that the considerations that I had brought forth neither interested nor influenced him.

When it was finally decided that Walter would be a member of the unit he was operated on again. He left his house in Allerton in an ambulance to take the boat train for New York. No one, I think, could fail to be impressed by this picture. Both his hands were bandaged, one was greatly swollen. He had put on his "store clothes," as he always called them, for the first time after operation to begin the journey. It seemed indeed remarkable that this man was on his way to the war-zone to help others. On the boat many of the doctors and nurses of the Harvard Unit first learned to know this cheerful, genial, lovable, kindly soul. Always quiet and retiring, nevertheless he was the centre and ringleader of the fun and merriment on the ship.

In England most of the unit were much disturbed because it was not known even then just where the unit was going. While we were bothering about petty details of our equipment the one man whose entire work depended upon his equipment refused to attempt to anticipate possible difficulties of details of equipment. He made a careful survey of the general nature of the work and of the general problems involved.

London was as ever a source of joy to Walter. He was born there. He derived much amusement from recalling incidents in his youth, particularly his escapades as a boy of eight in his attempts to be an actor. The London Cockney was a never-ending source of pleasure. His whimsical mind fashioned many a good story out of bits of conversation, and his good imitative powers and histrionic ability added greatly to the telling of these stories. Often late at night during the inactivity of the unit in Lon-

don he became reminiscent but always reminiscent of things that were pleasant. He spoke of his work but never of his operations. He spoke many times of his great good fortunes. He considered himself most happy in all of his associations, in his associations with the hospital, the University, with his friends and his wife. He liked to recall that he had been associated with Harvard University and Harvard men almost continuously for thirty years. His University associations dated back to the chemical laboratory where he became a laboratory boy at the suggestion of President Eliot. Doubtless Mr. Eliot has long since forgotten the boy he dissuaded from going to sea, but Walter cherished the recollection of two very pleasant interviews with Mr. Eliot. He recalled with gratitude how much the Massachusetts General Hospital and the men at the Hospital had done for him, but never mentioned what he had done for the Massachusetts General Hospital or the Massachusetts General Hospital men. He felt himself particularly fortunate in being able to go with the Harvard Unit. Curiously enough in that unit were two of the men who assisted Dr. Porter at the first of the series of wonderful operations that preserved Walter Dodd for so many years.

When we finally moved to France and got under canvas Walter had one very fixed idea—no concessions were to be made for him and his infirmities. Gladly would everyone, from the Commanding Officer to the lowliest orderly, have done anything in his power to increase his comfort, but Walter would have none of it. Even when he had a recurrence of his old painful sacro-iliac trouble, the substitution of a hospital bed for his canvas cot had to be surreptitiously arranged. Even then some of us were in great disfavor for the brief time that this kindly soul could harbor resentment towards anyone. Very characteristically he had loaned the sacro-iliac corset without which he was not supposed to travel, to a rich patient who was similarly afflicted, and so won his sympathy, but who had forgotten to return it.

In the work of a base hospital one has the feeling that it is largely a question of well trained hands and well trained minds. With such a mass of material the individual, surgeon or physician, is more or less lost. Some men have better training, others are perhaps more skillful, but it is given to few to contribute anything that others could not contribute if not equally well or at least nearly as well.

Parenthetically an obvious exception may well be made of our American dentists, particularly Dr. Hopkins and Dr. Kazanjian of our unit. But extremely striking was the contribution of Walter Dodd in his particular field. Handicapped by his own infirmities, by inadequate and inferior equipment, by insufficient and untrained assistance he was at once the invaluable man of the unit, at once the man

that gave something to the surgeons and, of course, to the patients, that no one else could contribute. Walter had long since spoiled the men at the Massachusetts General Hospital because they relied implicitly on his opinion for their guidance. In France, in a remarkably brief period, all the men came to place absolute reliance, not so much on his actual findings, but upon his sane interpretation of those findings. Not infrequently decision of operation was left solely to his judgment. It required only a short experience to convince all the men that Walter Dodd's opinions were consistently sound and accurate.

For equipment he had a very ordinary field x-ray outfit. He had one unskilled helper and one partially trained man. He left them both expert technicians. He rejoiced at this meagre equipment because it recalled to him the struggles of the early days and he wanted to emphasize the fact that good work is possible in his specialty under all sorts of conditions. Of course, he horrified his technicians by tearing his machine to pieces and then reconstructing it after his own fashion. In the next hospital the x-ray equipment was modern, elaborate and complete. At first they were inclined to be patronizing concerning our little x-ray plant. It was not long, however, before Walter was called in consultation to help them out of very serious difficulties. After the first few weeks any x-ray difficulties in the surrounding hospitals meant an emergency call for Walter Dodd. The x-ray work at our hospital served as a standard. Never was a more striking illustration of the fact that it is the human equipment rather than the mechanical equipment that counts. An interesting instance of his wide experience and of his vast fund of available knowledge comes to mind. Two of us visiting a nearby hospital were shown an unusual case of a bony tumor with x-ray photographs. The date for amputation of the limb was set. We asked the privilege of showing these x-ray photographs to Walter Dodd. He immediately recognized the condition as a rare form of tumor in which amputation was not indicated but in which local eradication of the tumor with preservation of the limb would be entirely successful. It would be futile to multiply the examples of his skill, not only in making the Roentgenological findings but more particularly in his sane interpretation of the findings. More than any other individual and more than all the other individuals of our unit he determined the high standard of the excellent work done.

Those of us who were with this particular Harvard Unit perhaps think of Walter Dodd in terms of his personal qualities rather than in terms of his professional qualities. Great as his professional attributes were they seem pale in comparison with his personal attributes. Everyone came under the spell of that wonderful personality. Apparently he had a wide visual field

for all goodness and beauty but congenitally he had a blind spot for the dark disagreeable and unpleasant qualities of men and things. Through habit of mind this blind spot seemed to have enlarged still further. His birth and his judgment made him a strong pro-ally; nevertheless he was not blind to the good side of Germany and the Germans.

Perhaps Walter Dodd will be most pleasantly remembered in connection with our leisure hours. Whether on an excursion, at the various gatherings, at the dinner table, or in his tent he was almost foremost in honest fun and wholesome cheerfulness. Nature endowed him with an agreeable singing voice which one likes to think was made richer and sweeter by his own character. He was always active in getting the men together for an informal session of songs. We forgot his infirmities as he would have us forget them. Our recollections are not at all the recollections of a tragic figure who had experienced with a glorious fortitude years of suffering for the benefit of science and humanity, or who had endured with complacent calmness many mutilating operations. Our recollections are and will be those of a happy, cheerful, humorous soul who looked upon the world and its products with a kindly eye and generous, who saw good in everything and everybody. In his presence everything and everybody was good. We recall one who was full of the joy of living and who loved life.

Clinical Department.

THE MUCOSA OF THE RECTUM AND SIGMOID COLON AS A FOCUS OF INFECTION.*

By HORACE W. SOPER, M.D., St. Louis.

MANY reports are appearing in the literature relative to foci of infection in the respiratory tract and the genito-urinary system. Billings in his admirable work on focal infection refers briefly to pus infections occurring in the hemorrhoidal veins and the anal canal. I wish to direct special attention to infections of the mucosa of the rectal and sigmoidal regions, inasmuch as my experience reveals that such localized inflammatory processes are quite common, often escape recognition for years and are etiologic factors in the production of systemic disease. I do not include in this report abscesses and other conditions about the anal canal and hemorrhoidal veins requiring surgical aid. Luetic, tubercular and amoebic ulcerations are also excluded. The paper is, therefore, limited to a consideration of the primary infections of the mucosa of the rectum and sigmoid by pyogenic micro-organisms, the resulting systemic effects, the subjective symptomatology, and finally to the changes pro-

duced by direct local treatment. Fifty cases were studied, varying in intensity from mild non-ulcerative infections of the ampulla recti to severe ulcerative processes involving the entire rectum and a part of the sigmoid colon. Illustrative abstracts of case histories are here presented which may serve as examples of the various groups.

CASE 1. Male, aged 49; height, 5 ft. 11 in.; weight, 165 lbs; tuberculous family history. Chief complaints: rheumatic pains in joints and various muscles for the past two years. For five years has had irregular bowel actions, usually three or four small, inadequate passages daily. Has had dull headaches, lassitude, inability to concentrate. Eyes, ears, nose, throat, and teeth had been looked after by competent men without detecting a focal infection. Blood pressure, 152-90. Urine showed a trace of albumin, many cylindroids, indican. Wassermann negative. Feces: many small clumps of mucus mixed with pus cells.

Procto-sigmoidoscopy revealed a very tightly contracted rectum. The mucosa of the ampulla recti was deep red, thickened, and covered with thin feces, in which were many clumps of mucopurulent material. Culture showed the presence of many gram-negative bacilli, a few gram-positive bacilli, many staphylococci, no streptococci. No tubercle bacilli were found.

Treatment. Insufflation of calomel powder through the rectal tube. He improved rapidly and the feces became normal in four weeks' time. Rectum free from mucus and pus.

A month later he returned with a relapse, the mucosa showing the same sort of infection as before. The wrists and fingers were distinctly swollen. After two weeks' treatment he again improved, and is apparently in a normal condition at the present time, six months after treatment was instituted.

In this group are found the cases usually diagnosed as auto-intoxication and neurasthenia. However, sigmoidoscopy revealed that an infectious agent was responsible for the condition. Twenty cases, varying in age from twenty-one to forty-nine, were observed.

CASE 2. Female aged 43; height, 5 ft. 8 in.; weight, 123 lbs. Two children. Chief complaints: constipation as long as she can remember. For the past ten years has had rheumatic pains and swelling of the finger joints, backache, and especially severe headaches of migrainous type, occurring two or three times a month. Recently they were so severe that codeine and morphine were given hypodermatically to control the attacks. Eyes, teeth, nose and throat had been carefully looked after by competent specialists. Had an operation for hemorrhoids two years ago. Her diet had been carefully regulated without any influence upon the headaches. Wassermann negative. Examination of urine and blood revealed nothing abnormal. Feces showed the presence of mucus, red blood cells, and pus cells. No culture made. Smear showed presence of diplococci and staphylococci. No gonococci. No tubercle bacilli.

The sigmoidoscope disclosed the presence of a general catarrhal condition of the entire mucosa

* Read before the St. Louis Society of Internal Medicine, Jan. 17, 1917.

of the rectum, extending to the plicae sigmoidae. The membrane was much thickened and covered with small clumps of mucus and purulent material. The scar tissue from the hemorrhoidal operation caused considerable contraction of the anal canal.

Dilatations and daily treatment by calomel insufflations for six weeks, together with the use of oil enemata, finally produced normal, daily bowel movements, subsidence of the local inflammatory process and freedom from the attacks of headaches. No recurrence for the past twelve months.

The cases in which migrainous headaches and spastic constipation were the predominant symptoms were twelve in number. Eight showed the same striking improvement as the one described. In two cases the headaches recurred at longer intervals and were milder in type. In two the constipation was relieved but the headaches persisted.

CASE 3. Female, aged 35; height, 5 ft. 3 in.; weight, 110 lbs.; single. For ten years had trouble with bowels,—irregular, constipated, sometimes diarrhea after eating fruit. Severe diarrhea and cramps after taking purgatives. For the past four years has been an invalid. During this time had suffered four surgical operations: first, pus appendix; second, ovarian abscess; third, empyema of the gall-bladder; fourth, excision of gastric ulcer. Chief symptoms are almost constant occipital headaches, pains in joints (no swelling), pains in muscles, extreme nervousness, insomnia. Blood pressure, 100-80. The urine showed albumin and casts. Otherwise the kidney function was good.

Sigmoidoscopy showed a marked hemorrhagic pus proctitis limited to the ampulla recti. The entire membrane was much thickened and covered by a thick layer of bloody pus. No gonococci or tubercle bacilli were found. Culture showed bacilli coli, staphylococci and streptococci. It required six weeks' daily local treatment of calomel powder completely to clear up the infection and restore the mucosa to a normal condition. She has remained well for the past year, gaining 20 lbs. in weight and is able to resume her work as stenographer.

Ten of the case series belonged to this group. In some of them there was a probability that there had been an original infection by gonorrheal pus. However, the gonococci could not be isolated and the inference was that a general mixed infection had persisted. All showed sequelae such as appendicitis, cholecystitis, gastric and duodenal ulcer and kidney disease. A curious feature of this group is the tendency to hemorrhage. One case which was seen in consultation with Dr. Hugo Ehrenfest had several severe rectal hemorrhages.

CASE 4. Female, aged 64; height, 5 ft. 5 in.; weight, 112 lbs. Has suffered from arthritis deformans for twenty years. Joints of hands, wrists and shoulders affected. Has had many attacks of neuritis. The chief subjective symptoms were much intestinal gas, cramps, alternating constipation and diarrhea. Blood pressure, 180-100. Heart considerably hypertrophied; general sclerosis of arteries. Kidneys showed considerable impairment,

probably chronic interstitial nephritis. Feces showed small, bloody muco-purulent clumps.

The sigmoidoscope revealed an ulcerative proctosigmoiditis involving the entire rectum and two inches of the sigmoid. Purulent material was negative for tubercle bacilli and gonococci. Culture showed many gram-negative bacilli, many diplococci and streptococci.

It required two months' local treatment to restore the mucosa to a normal condition (insufflations of calomel three times weekly). The joints are less painful, but otherwise unchanged. She gained in weight and strength and the bowel function is good.

Seven cases were observed in which chronic interstitial nephritis and arthritis deformans were the predominant lesions. All showed much improvement in general nutrition and amelioration of the subjective symptoms with but little change in the joint conditions.

CASE 5. Female, aged 26; height, 5 ft.; weight, 95 lbs. Dates trouble from attack of typhoid fever ten years ago. Bowels much constipated. Defecation always painful, more so after laxatives. Has suffered from attacks of dyspepsia, nervous symptoms and loss of weight. Has often had low fever lasting for weeks. The examination of the urine showed a trace of albumin, hyaline casts, trace of sugar, strong indican and weak acetone reactions. Feces consisted of a small amount of fecal matter mixed with a mass of pus and blood. Wassermann negative.

Sigmoidoscopy. The entire mucosa of the rectum and the first three inches of the sigmoid is involved in a severe chronic ulcerative process. The wall of the bowel and mucosa is much thickened and covered by a thick, bloody pus. Culture showed a mixture of gram-negative and gram-positive bacilli, staphylococci and streptococci. No tubercle bacilli and no typhoid bacilli could be identified.

X-ray examination showed an absolute stasis in the transverse colon. The bismuth meal was retained here for one week. The x-ray diagnosis was, therefore, an obstruction, probably in the splenic flexure.

Treatment. Daily insufflations of calomel caused steady improvement, and in eight weeks' time the mucosa was in a normal condition. She gained 17 lbs. in weight, and all nervousness and headaches disappeared. Re-examination in October last showed no return of the infection and her health was fully restored. Bowel function normal. The colonic stasis was evidently due to a spasticity at the splenic flexure, and not to a true stenosis.

This case was unique inasmuch as it followed an attack of typhoid fever. She was probably not a carrier as no cases have occurred in her family.

The consideration of these cases raises an important question: is the inflammation limited to the rectum and sigmoid, or is the entire colon involved? In the cases here presented the return of the mucosa to a normal condition, a view of normal membrane higher than the diseased area and the absence of pus or mucus in the feces were taken as evidence that the lower colon alone was involved.

Cases of general colitis were encountered which were treated by other methods, notably autogenous vaccines. They are reserved, however, for a subsequent report.

In a considerable number of cases, not here reported, the incidence of pyorrhea alveolaris, pus proctitis and gastric or duodenal ulcer was noted. They were omitted in this paper as it was difficult to determine which was the primary lesion.

SUMMARY

First: The lower colon is frequently invaded by pus-forming organisms. The infection is mixed in character and exhibits an extreme degree of chronicity. The resulting systemic disease varies from merely nervous disturbances, headaches, and constipation to pus infection of the appendix and gall-bladder, gastric ulcer, arthritis deformans, and chronic kidney disease.

Second: Treatment by dry powder insufflation method of Rosenberg is extremely efficacious. Calomel is the powder of choice for local use as it adheres well to the mucosa and cannot be easily dislodged. It is non-irritant and may be applied to the sensitive mucosa of the anal canal without producing pain. There is no danger from absorption. Not a single case of systemic disturbance followed the daily use of large quantities. Finally, calomel has probably more antiseptic power than any other available powder.

Third: In the search for foci of infection, the lower bowel must not be neglected. *In fact no general examination of a patient is complete without procto-sigmoidoscopy.*

A CASE OF MELANOTIC SARCOMA ARISING IN THE EYE, WITH METASTASES; AUTOPSY FINDINGS.

By LESTER ADAMS, M.D., BANGOR, ME.,

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THE patient was a white woman, aged 30, admitted to the medical service of Dr. Bertram L. Bryant on March 6, 1916, complaining of pain in the right lower thorax.

Family History. Unimportant. One sister has been treated for "nervous trouble" at the Bangor State Hospital (for insane).

Personal History. Health has been good, with the exception of "acute rheumatism" five years ago, from which she made a good recovery. Patient does not remember about the diseases of childhood. She has borne three apparently healthy children and has had no miscarriages.

Four years ago (1912) patient had what her physician told her was a "hemorrhage into the retina." There was slight pain and indefinite disturbance of vision in right eye, coming on suddenly during labor. The trouble with the eye continued, and about one year after onset she consulted an oculist. Dr. H. T. Clough saw her at this time, and has kindly given a description of the condition as he saw it. There was an irido-cyclitis,

complete blindness, increased tension, and the fundus could not be seen. At the end of two years after the onset of symptoms, and after continued anti-syphilitic treatment had given no relief, the eye was removed. This was in 1914, about two years before the patient appeared at the hospital. During these two years the patient was well except for attacks of "sciatica."

Present Illness. One month before admission (about Feb. 1, 1916) there has been a persistent pain in right lower thorax, under the breast, becoming increasingly troublesome. There has been also loss of appetite without apparent emaciation, and patient has become very "nervous and depressed," feeling that death was imminent.

Physical Examination. Patient is a woman of short stature and very obese. The mentality is of a low grade, but memory seems clear. She is greatly worried over her condition. The breasts and abdominal wall contain a great amount of fat. The limbs show proportionately more in the proximal parts. There are no painful nodules. The skin is smooth, good color, and shows no abnormal pigmentation or moles.

Eyes: There is an artificial eye on right. Vision of left eye is good. Pupil reacts normally.

Ears, nose, mouth and throat show nothing remarkable.

The neck is very short. There are no palpable glands.

Chest examination is unsatisfactory because of the thick layer of fat. Breath sounds are distant. Over the lower half of right lung are heard a few fine moist râles, increased on deep breathing. There is no friction rub or tubular breathing. Over the left side the breath sounds seem clear.

Heart: There is no apparent enlargement. No murmurs are heard. The pulse is regular in force and rhythm, fair volume, 80 to the minute. Blood pressure: systolic 130, diastolic 80.

Abdomen: Examination is very difficult because of the excessive fat. Pressure over the lower ribs in front and in axilla on right causes pain. There is an indefinite resistance just below the costal border in front, suggesting the edge of the liver.

Glands: In both groins are felt glands .5 to 1 cm. in diameter. Cervical, axillary and epitrochlear glands are not felt.

Vaginal examination shows a lacerated cervix and perineum.

White blood count, 11,000.

Differential count with Wright's stain shows 73% of polymorphonuclear neutrophils, and 13% of small lymphocytes. In fresh and stained smears the red cells appear normal.

Wassermann test negative.

The urine showed on several examinations a specific gravity between 10.20 and 10.30. The color was yellow, and did not change on standing 24 hours. There was no albumen and no sugar. One examination, two days before death, showed cystin crystals. One phenolsulphonaphthalein test showed an excretion of 63% in two hours.

X-ray examination of the chest showed diffuse opacity in both lungs. Bismuth plates of the abdomen showed nothing remarkable.

Temperature and pulse were normal on admission, becoming elevated during the last few days, when there were diffuse râles in both lower lungs. The terminal signs were those of broncho-pneumonia.



FIG. 1. Roentgenogram showing opacities in lungs.

Autopsy. Description of body: Rigor mortis is present and there is lividity of back. The skin shows no ulceration or mole in any part, no abnormal pigmentation. There is a glass eye on right. The tissues of orbit show no evidence of tumor. The left conjunctiva is clear, the pupil moderately dilated.

The panniculus measures 7 cm. The peritoneal

surfaces are smooth and glistening except on the lower margin of the liver, where there are seen several nodules, circular in outline, 1 to 3 cm. in diameter, slightly elevated, and each one showing a central umbilication. They are of a slate gray color, and are covered by the capsule of the liver. The liver edge extends 4 cm. below the costal margin. Nowhere else in the abdomen are any similar nodules.

Chest: The pleura is everywhere studded with nodules similar to those seen in the liver, except that they are black and show no umbilication. On the parietal pleura are seen black masses 1 to 6 cm. in diameter, attached only by very fine pedicles, and these can be removed in large clusters. Similar growths are found at the hilus of each lung. The two sides of the chest present similar appearances. There is no free fluid in the chest. At the right apex and at the right base there are a few fine delicate adhesions.

Heart: The pericardium is not involved in the tumor growth. The pericardium contains about 15 cc. of clear fluid. The heart is not hypertrophied or dilated, and the valves appear normal.

Lungs. The lungs are rather voluminous and very heavy. Section shows the black tumor nodules scattered throughout the substance of the lung, preserving everywhere a distinct outline.

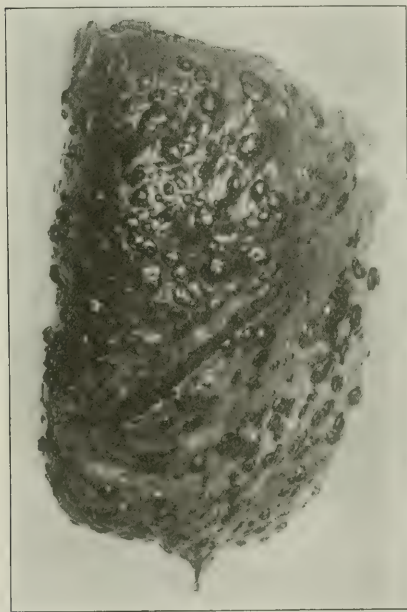


FIG. 2. Photograph of left lung showing black tumor nodules.

Liver: The liver is moderately enlarged, extending about 1 cm. below the costal margin, and presents on all surfaces the umbilicated nodules described above. Section shows these nodules in the substance but more numerous near the surface, and more widely separated than in the lung.

The spleen, kidneys, adrenals, stomach and duodenum, pancreas and intestine show no involvement by the tumor growth, and present nothing worthy of note.

The ovaries show no tumor growth; they are small and atrophic. There is no tumor about the external genitalia.

Brain: The surfaces are smooth and glistening. The optic nerves followed into orbits show no tumor



FIG. 3. Photograph of liver showing umbilicated nodules and portion of diaphragm showing nodules on pleural surface.

growth. The hypophysis is normal in size and appearance.

Microscopic sections of the tumor masses from lungs and liver show a melanotic sarcoma.

We have, then, a melanotic sarcoma, involving the lungs and liver. In the past history there was irido-cyclitis with secondary glaucoma, necessitating removal of the eye. Although there was no tumor mass noted in the eye at the time of removal, it seems certain that the primary growth was in this eye. The autopsy has eliminated other possible points of origin, such as the pia arachnoid, the skin and ovaries.

This case is similar to, and almost identical with, a few cases recorded. The lungs and liver are the favorite seats of metastases.

Alter¹ mentions the four arbitrary stages of the disease:

"1. Tumor usually seen with the ophthalmoscope, where there is a visual defect corresponding to the tumor.

"2. Complete blindness, tension increased. (Diagnosis difficult.)

"3. Extension outside, either anteriorly or posteriorly along preformed spaces. When tumor extends posteriorly exophthalmos develops. After perforation the pain ceases.

"4. General metastases, most often involving the liver, less often the lungs and skin. There may be extension to the brain and spinal cavity."

He says, "In rare instances there are symptoms of severe irido-cyclitis; the eye becomes softer so far as tumor contained in it permits."

Most reports show a gradual loss of sight, but rarely a sudden loss, as in this case, it being accounted for by the fact that the slight defect in vision is not noticed, but that sudden detachment of the retina produced by the tumor growth causes complete blindness. Lediard² mentions a case in which the onset was similar in its suddenness to this one.

Concerning the frequency of the disease, Keipe³ quotes the classical report of Fuchs, which shows in 137,545 eye patients 97 sarcomas of the uveal tract, or .07%.

The diagnosis is difficult because of the infrequency of the disease. In this particular case the diagnosis was difficult in the early stage, because of the similarity to syphilitic disease of the eye. When the patient came to the hospital the history of the eye condition was misleading. The diagnosis was further made difficult by the extreme adiposity of the patient. In a thinner person the x-ray plates of the chest would have been better evidence, and the nodules in the liver might have been palpated. The pain in the right side seems readily accounted for by the dense tumor masses involving the right pleura.

REFERENCES

- ¹ Alter, F. W.: Ohio State Jour. Med., 1912, Vol. vii.
² Lediard, H. A.: Tr. Ophth. Soc. U. Kingdom, London, 1912, Vol. xxxii, pp. 239-246.
³ Keipe, George F.: Am. Ophth., St. Louis, 1913, Vol. xxii.

SYSTEMIC OIDIOMYCOSIS: WITH MANIFESTATIONS IN CENTRAL NERVOUS SYSTEM.*

BY FREDERIC J. FARNELL, M.D., PROVIDENCE, R. I.,
 AND
 SAMUEL STARR, M.D., PROVIDENCE, R. I.

[From the Pathological Laboratory of Butler Hospital, Providence, R. I.]

IN a recent monograph of the Rockefeller Institute for Medical Research, Stoddard and Cutler¹ reviewed the literature and offered the relationship existing between coccidioid granuloma, blastomycosis (oidiomycosis) and torula infection in man. It has been a topic of much discussion in times past as to whether blastomycosis was a name applied to a group of various organisms, or was a classification for a distinct clinical entity. In 1912 Rusk and Farnell² described two cases with autopsy reports in which spherical, or oval budding, doubly contoured organisms were found throughout body viscera and brain; these organisms were classified under the genus of *Oidium*. One patient died from exhaustion in a senile confusional state and the other from a systemic infection (considered pulmonary tuberculosis) and what was recognized clinically as dementia paralytica. Stain sections from the viscera and brain, how-

ever, from both cases ruled out senile dementia in the one and dementia paralytica in the other, and demonstrated that both cases died from systemic oidiomycosis. Recently, Stober³ of Chicago, Brown and Commins⁴ of San Francisco and Wolbach⁵ of Boston have summarized the clinical pathology and therapeutic diagnoses of two of the three conditions,—coccidioid granuloma and oidiomycosis,—whereas Stoddard and Cutler have summarized the torula infection in man. All these parasitic diseases as they occur in man, bear a close resemblance to tuberculosis, and it is because of this fact that the report of this case has appeared noteworthy.

The case, a man, was a patient of Dr. Arthur J. B. Falcom of Pawtucket, Rhode Island, who has furnished us with a greater part of the history.

T. R., male; married; age 57; carpenter by trade. There is nothing of note in the family history for two generations past.

Personal History. He was born in Canada in 1859, the sixth in a family of eight. His infancy and early childhood were uneventful. He attended school until he was sixteen years of age, after which time and until the age of thirty, he either worked as a store-keeper or a farm hand. At thirty he came to Pawtucket, where he has followed the trade of a carpenter. He married at twenty-five years of age, a healthy, French-Canadian, who has given birth to five children—one boy and four girls. One girl died at five months of cholera infantum. The youngest living girl has a healed mid-dorsal tubercular spine with deformity. The remaining members of the family are quite well.

The patient has never used tobacco in any form. He drinks very infrequently of gin. He denies both gonorrhea and syphilis. Until the present illness he has had no medical attention of note.

Present Condition. In April, 1914, the thumb on his right hand developed a "felon". This mass was incised with the discharge of considerable pus. The attending physician curetted the terminal phalanx at a later date because of the continued discharge of pus and the fact that the wound did not heal. At the end of six months and after several curettings, drainage and the use of the violet rays, the lesion healed. In the following February (1915) he complained of severe pain in the back opposite the right shoulder, which continued for four weeks before the development of signs of inflammation, tenderness, redness and swelling. At this time one of us, (S), saw the patient and suggested an examination of the blood for a Wassermann reaction. The report of the reaction was negative. Notwithstanding the negative report, however, salvarsan was given him intravenously. Following the introduction of antisyphilitic treatment, the patient became very much worse physically. He developed a hacking cough with profuse expectoration; loss of weight and strength was excessive, and it was necessary for him to take to his bed in an advanced degree of exhaustion and suffering severe pain in the right side, encircling the chest and abdomen and extending down the right leg, with a greater loss of strength in the right leg muscles. His temperature was 100, pulse 90 and respiration 36. At this period he was seen by Dr. F.

* Clinical Presentation before Boston Society of Psychiatry and Neurology, Dec. 21, 1916.

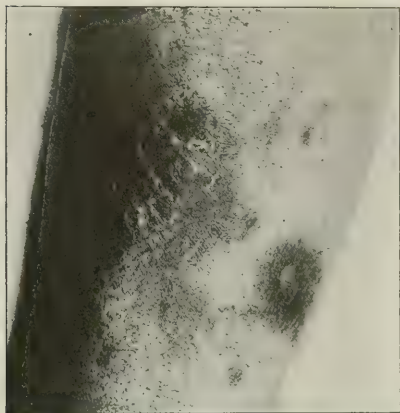


FIG. 1. Healed lesions on leg of a patient, copper colored, pitted edges and a rough surface.

Physical Examination. A tall, pale, emaciated man of 57, coughing almost continuously. Chest examination revealed areas of activity which were called tubercular. (No tubercle bacilli found in the sputum.) On account of great subjective pain, he lay usually on his left side. His pupils were dilated, but reacted promptly to light and accommodation. There were no cranial nerves affected. His breathing was shallow and labored. His heart was negative. Blood pressure, 140. He complained of cramps or spasm in his right leg, with sharp, shooting pains. His knee-jerks were exaggerated, the right greater than the left. The Achilles jerks were unequal, the right greater than the left. There was a right ankle clonus and a dorsal extension of the big toe on the right foot. The sense of position was not disturbed. Aside from tenderness of the peripheral nerves and a general hypersensitiveness of the whole right side, there were no sensory signs. On his left shin-bone there was a swelling, somewhat tender but not fluctuating. An x-ray* of his chest and upper spine showed foci of apparent tubercular processes and an absorption of bone in the upper dorsal region of the spine, with acute angulation of the 3d and 4th dorsal vertebrae. Von Pirquet's skin tuberculin reaction was negative. Noguchi luetin reaction was also negative. Thus far, notwithstanding the mixture of signs, the symptom-complex suggested pulmonary tuberculosis with possible meningitic complications and the man also suffering from syphilis.

An examination of the spinal fluid revealed 18 lymphocytes per c.mm. The amount of globulin and albumen was also increased in the fluid. The

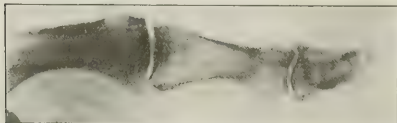


FIG. 2. "Moth-eaten" terminal phalanx, the primary lesion.

* We wish to express our thanks to Dr. I. Gerber for the publication of his x-ray pictures.

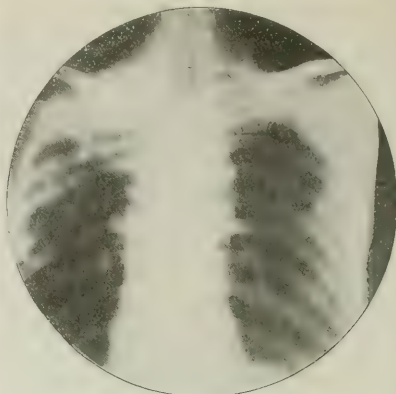


FIG. 3. X-ray of chest showing foci of infiltration and areas of calcified processes not unlike pulmonary tuberculosis.

Wassermann reaction was negative, and the colloidal gold reaction showed no precipitation. The cellular differentiation, however, showed some densely stained cells quite unlike lymphocytes, which upon decolorization proved to be the oidium, or blastomyces.

A probable clinico-pathological diagnosis of blastomycosis having been made, the patient was given potassium iodide in large increasing doses, 80 to 300 drops of a saturated solution a day. Within seven days he began to improve. Stoddard and Cutler say: "Coccidioidal granuloma, not helped by iodides; torula infection, not helped by



FIG. 4. X-ray of upper dorsal spine showing an acute angulation of second and third dorsal vertebrae and an increased density of the bony parts.

salvarsan, no data as to the effect of iodides; oidiomycosis, usually helped by iodides." During the last six months the patient has improved in general health. His cough and expectoration have subsided. He has no signs of spinal cord or meningeal disorder. He has gained considerable weight and strength, and has worked for a short while this summer. Five weeks ago, after a period without iodides, a suppurating lesion appeared in the right lower chest. The pus was aspirated, and both cultures and animal inoculation made. The cultures contained the oidium and the streptococcus viridans. The animal (a guinea pig) was killed after four weeks, but showed no evidence of the mould in the peritoneal cavity.

The mechanism of invasion of the disease process in this patient is problematical. He is a Frenchman of comfortable means, living in a good hygienic environment. He has never been injured or suffered from any infectious disease. The question of working on old buildings or building new structures out of old lumber may be a possibility, but hardly a probability. This organism has as its habitat, often rotten, decayed wood. Stober has cultivated the mold on loaves of bread, pieces of wood and moldy leather. The general opinion is that the infection enters the body by way of the respiratory tract. This, therefore, causes considerable confusion, clinically, in differentiating the disorder from tuberculosis. Its dissemination is probably by the lymph-stream, and thus such points of election as periosteal nodes, the liver, brain and meninges, cause it to resemble syphilis.

Notwithstanding the apparent confusion in differentiation between this disease process and tuberculosis or syphilis, it is absolutely essential to exclude coccidioidal granuloma, torula and yeast infections by the demonstration of the budding oidium and the general improvement under iodide treatment.

BIBLIOGRAPHY.

- ¹ Stoddard and Cutler: Torula Infection in Man, Monograph No. 6, Rockefeller Institute for Medical Research, 1916.
- ² Rusk and Faudel: Systemic Oidiomycosis, University of California Publications of Pathology, 1912.
- ³ Stober: Systemic Blastomycosis, Archives of Int. Med., Vol. 13, 1914.
- ⁴ Brown and Commens: Differential Study of Coccidioidal Granuloma and Blastomycosis, Arch. Int. Med., Vol. 15, 1915.
- ⁵ Wolfbach: Recovery from Coccidioidal Granuloma, BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. 172, 1915.

COMPARATIVE STATISTICS ON PHYSICAL EXAMINATIONS OF PUPILS OF THE BOSTON PUBLIC SCHOOLS FROM DECEMBER 1, 1915, TO APRIL 1, 1917.

By WILLIAM H. DEVINE, M.D., BOSTON,

Director of Medical Inspection.

	1915-16	1916-17
Total number of pupils examined . . .	99,862	104,287
Total number without defects . . .	30,781	38,318
Total number with defects	69,081	65,969

DEFECTS AS FOLLOWS

Defective nasal breathing		
Anterior	1,292	1,297
Posterior	5,966	5,282
Hypertrophied tonsils	18,444	14,806
Defective palate	351	169
Cervical glands	18,841	7,746
Pulmonary disease		
Tuberculous	44	22
Question		1
Non-tuberculous	683	453
Cardiac disease		
Organic	1,330	1,406
Functional	1,668	1,716
Nervous disease		
Organic	74	48
Functional	221	179
Chorea	43	23
Orthopedic defects		
Tuberculous	88	76
Non-tuberculous	1,698	1,770
Skin	3,071	2,978
Rickets	383	326
Malnutrition	2,110	1,712
Mental deficiency	431	448
TOTALS	56,738	40,458
* Defective teeth		
Defective primary	32,997	
Defective primary (Oct., Nov., Dec.)		22,745
Defective secondary	23,753	
Defective secondary (Oct., Nov., Dec.)		17,493
Defective (classed without regard to primary or secondary from Jan. 1, 1917)		15,400
TOTALS	56,750	55,638
GRAND TOTALS	113,448	96,096

Last year a "Report on Physical Examinations of the Pupils of the Boston Public Schools" was published in the BOSTON MEDICAL AND SURGICAL JOURNAL,[†] and now comparative statistics for the last two years may be interesting.

It is evident that comparative statistics to be of real worth should be deduced from similar conditions. It is hoped that each succeeding year will prove the value of medical inspection as a prime factor in prophylactic medicine.

The opening of schools was postponed this year until October 1, owing to the epidemic of acute anterior poliomyelitis. This necessitated a delay in the completion of the physical examinations.

This year's report shows a decided gain in the number of children without defects.

The number with defects was 69,081 in 1915, and at the same rate the defects this year would be over 73,000.

Defective anterior nasal breathing is about the same as last year, but there is a decided falling off on the posterior. A marked diminution is

^{*} During the year 1915-16, and from October 1, 1916, to January 1, 1917, defective teeth were classed as primary and secondary. In some instances, if a pupil had defective primary and defective secondary teeth, it was recorded as two defects instead of one. In order to avoid duplication of defects, it was thought advisable to record defective teeth as one defect without regard to whether they were primary or secondary. This method was adopted commencing January 1, 1917, and precludes comparison for the two years.

[†] May 25, 1916, (Vol. clxxiv) page 774.

also noted in hypertrophied tonsils. This improvement in nose and throat conditions can be accounted for, to some extent, by the throat and nose operations performed last year on recommendation of the school physicians.

The decrease in cervical glands is partly due to the fact that this year school physicians have been instructed not to report slightly palpable glands when secondary to adenoids, tonsils, carious teeth, pediculosis, or some allied condition. These cases are kept under observation, and only the primary causes reported.

In 99,862 pupils examined last year, forty-four cases of pulmonary tuberculosis were found. In 104,287 physical examinations for the present school year, there were only twenty-two cases reported. This is certainly a remarkable showing, and it is hoped that future reports will continue to note a marked diminution.

In commenting on the report of last year, the editor of the JOURNAL stated, referring to cardiac diseases, "After all, the majority of children with organic lesions will always be handicapped, and all the medical care in the world cannot bring them up to the average physical standard." A comparison of the tables of last year and this year would seem to indicate that this observation was well founded.

The decrease in nervous diseases, organic and functional, including chorea, is encouraging.

The various activities of the School Department that have for their object the prevention of dental disease are too broad to discuss in this article. This year the medical department has paid special attention to the kindergarten and lower grades and has devoted much energy to securing the coöperation of the various dispensaries. Encouraging results are expected from this work in the near future.

THE USE OF RADIUM IN THE TREATMENT OF CUTANEOUS EPITHELIOMA AND KERATOSIS SENILIS.

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AND

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WHATEVER discrepancies of opinion which exist at the present time with respect to the value of radium in systemic malignant neoplasms, there seems to be unanimity of opinion regarding its efficacy in the treatment of epithelial tumors of the skin, and to which should be properly appended keratosis senilis as a precancerous lesion.

Since the early work of Wickham and DeGrafs in France, and Abbe and Simpson in this country, evidence in favor of radium treat-

ment for skin cancer is cumulative. While it should never be the brief of the physician to avoid surgery, except when other methods warrant it, yet it should be granted that if surgery can be avoided in a given affection and equally good results obtained, there are distinct advantages in favor of such procedure.

The efficacy of x-ray, for example, has long been conceded, as statistics tend to prove. But here one is confronted with increasingly complicated apparatus and corresponding delicacy of technic. Accurate dosage in x-ray therapy has always been difficult to obtain and even today, with the more perfected tubes and direct methods of gauging dosage, the margin of safety is still rather narrow and demands an operator of the utmost skill.

It is not our purpose to eulogize radium in too optimistic terms, and in general we are interested mainly in the cure of our patients by any means whatsoever. Our experience in the use of radium during the past two years, however, prompts a cordial appreciation of its ability to heal skin cancers; while its uniformity of potential, allowing accuracy of dosage, together with a fairly broad margin of safety, renders it a remedy especially adaptable to lesions of this nature. Healing is obtained with slight inconvenience to the patient; no discomfort of any moment and with cosmetic results unobtainable by any other means.

The following case reports, taken from private practices of the writers, are illustrative of types amenable to radium treatment. The results were obtained by one-half and one-quarter strength applicators, collectively containing eight milligrams of radium element.

CASE 1. Mr. F. B. N., aged 47. Quarter-sized epithelioma of one year's duration on the right cheek.

Radium in a half strength applicator was applied for seven hours, divided in seven treatments



FIG. 1.

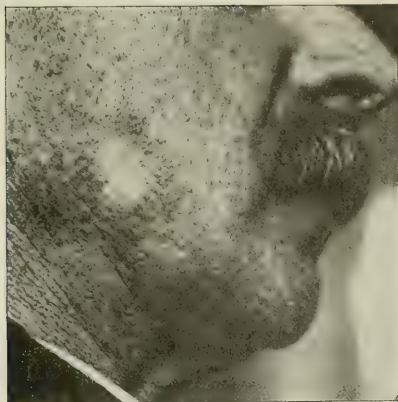


FIG. 2.

of an hour each at weekly intervals. Twelve weeks after the first application the lesion was completely healed. There was no sign of a recurrence after four months.

CASE 2. Mr. A. M. C., aged 42. Dime-sized, superficial epithelioma on the concha of the left ear, of nine months' duration. A slight exposure for three hours of unscreened, half strength radium applicator was sufficient to eradicate the lesion. Complete healing took place in one month.

CASE 3. Mr. S. K., aged 65. Recurrent epithelial growth, 1 by 2 cm., at the periphery of a scar of an old growth curetted some years before from the right cheek. The lesion completely healed in two months' time, after two treatments for an hour each, at four weeks' interval, with a half strength radium applicator.

CASE 4. Dr. X., aged 60. A small ulcerated epithelioma, $\frac{3}{4}$ cm. in diameter, situated on the left ala nasi. The borders of the lesion were firmly indurated. The affection was first noticed four or five years ago as a small keratosis. It remained practically stationary until three months ago, when it began to enlarge and become a nodule.

Radium was applied to this patient for an hour and a half, divided into two applications of three-quarters of an hour each, at weekly intervals. Quarter strength applicators were used. Complete healing ensued; the scar was slight and plastic, and there has been no recurrence after an interval of seven months.

CASE 5. Mr. G. A., aged 70. Recurrent epithelioma in cicatrix following excision and treatment by x-ray. The affection began five years ago over the left mastoid region and became an ulcerated nodule 2 by 3 cm. in diameter. Two years ago the lesion was excised but it recurred in three months.

A total time of six hours' application of radium was made to this lesion, divided into three exposures. Quarter strength applicators were used with a screen of .5 of aluminum. Healing was complete in two months. The cicatrix is still sound with no evidence of relapse after seven months.

CASE 6. Mr. G. E., aged 79. Epithelioma over

right malar prominence, 3x3 cm. in diameter. The lesion was mainly ulcerative, but there was also a characteristic indurated periphery. There were also several small keratoses on various parts of the face which were also removed by radium. This epithelioma was given a total dosage of seven hours, unscreened, each exposure lasting from one to two hours. Some time was needed in this case to remove a deep nodule at the upper part of the lesion. The patient is still coming for treatment of a keratosis on one side of the neck. The scar at the site of the recent epithelioma is observed to be sound.

CASE 7. Miss R., aged 40. Two small nodules, $\frac{1}{4}$ cm. in diameter, near the muco-cutaneous border on the left lower lid. The affection had been noticed for about six months. The nodules disappeared following three hours' radium application. Light screening with aluminum foil and $\frac{1}{4}$ -strength applicators were used.

CASE 8. Mrs. P. M., aged 78. Epithelioma of left side of lobe of nose, recurrent in cicatrix. This lesion was treated by one of us with x-ray three years ago. There have been three recurrences during this period. After five hours' treatment with radium, complete healing ensued, and there is no evidence of return after a lapse of seven months.

CASE 9. Mr. J. E., aged 65. Extensive ulcerative epithelioma of the nose. The affected area is roughly quadrilateral in shape, the lateral diameter being two inches, the perpendicular diameter two and a half inches. The borders of this lesion are indurated and everted; the central portion is an ulcer.

To this epithelioma a total exposure of eighty hours was given, divided usually into two- and three-hour treatments. With the longer applications light lead screening was used.

After four months there remain but two palpable nodules. These are at present under treatment.

CASE 10. Mrs. P., aged 68. Nodular and ulcerative area on the left side of frontal region, approximately an inch in diameter. The patient's family physician had frequently cauterized the outbreak, but it had invariably relapsed in the scar. Here was complete healing after three hours of radium.

CASE 11. Mrs. J. V., aged 65. Small nodule, $\frac{1}{2}$ cm. in diameter, on the external surface of the left auricle. Complete healing occurred from four hours' exposure.

CASE 12. Miss L. R., aged 38. Epithelial nodule, occurring at the border of a pigmented nevus. Healed after three hours' exposure.

CASE 13. Mr. F., aged 55. Keratosis senilis. Several small keratoses on the external surfaces of both auricles. Each lesion was given one hour's exposure with $\frac{1}{4}$ strength applicators. Prompt healing followed.

CASE 14. Miss B. E., aged 35. Small epithelial nodule at the left inner canthus. Complete healing with three hours' exposure. Light aluminum screening was used.

CASE 15. Mr. A. J., aged 80. Epithelioma, nodular and ulcerative, on the left side of the forehead, one centimeter in diameter. Complete healing after four hours' exposure; $\frac{1}{4}$ strength applicators were used, without screening.

CASE 16. Mr. J. O., aged 58. Ulcerated nodule, $\frac{1}{2}$ cm. in diameter, on left lower lid. The patient also has numerous keratoses. The nodule and also several of the more prominent keratoses were healed with five hours' exposure.

CASE 17. Miss W., aged 54. Two small keratoses, one on either side of the nose. Each lesion healed after exposure of one-half hour, without screening.

CASE 18. Mrs. M., aged 56. Three small keratoses, one on the nose, the others on the left cheek. Complete healing after two exposures of one-half hour each.

CASE 19. Mr. L. P., aged 60. A business man presented a dime-sized, simple keratosis senilis upon the left malar eminence. Radium, in a half-strength applicator, was applied for twenty minutes, without screening. Reaction to the extent of reasoning and the formation of a dry crust appeared after seven days, and on subsiding about six days later, the skin appeared normal, and has remained so after a period of one year.

CASE 20. Mrs. R., aged 72. This lesion consisted of a rapidly-growing tumor, half an inch in diameter, with pearly borders and a central horn, three-eighths of an inch high, that had been present upon the upper lip for six months. Unscreened radium, in a half-strength applicator, was applied three times at weekly intervals for periods of forty-five minutes, one hour, and one hour and a quarter respectively. The projecting horn began to crumble away at once, and ten days after the last treatment considerable redness and crusting appeared as the result of the exposures. The applicator was screened with 2 mm. of brass and applied for thirty minutes. Two weeks later the reaction had entirely disappeared, leaving only a slight crust on a flat surface. Radium, with the same screening, was applied for forty-five minutes. The final scar was smooth and free from recurrence.

CASE 21. Mr. H. C., aged 70. The patient showed an epithelioma of several years' duration, upon the right side of his neck, at the collar line. The lesion was oval, an inch wide at its broadest point, and had a crusted ulcerative center and raised pearly borders. Six hours of unscreened radium, in hour exposures at weekly intervals, completely healed the lesion. Recurrence was guarded against by applying the radium with the 2 mm. brass screen for one hour every fortnight for four times.

CASE 22. Mr. R., aged 68. This patient had been troubled by a small, hard, keratotic growth in the outer fold of the right ear. Pain on pressure was so severe as to compel the patient to give up sleeping on the affected side. A single twenty-minute application of unscreened radium, in a half-strength applicator, was sufficient to relieve the pain after a few days. Two further twenty-minute treatments entirely removed the keratosis.

SUMMARY.

Radium effectively heals *epithelioma* and *keratosis senilis*. The cosmetic results following its use are excellent. An especial field of usefulness is about the nose and eyelids, where surgery is difficult and the results deforming. An advantage over x-ray therapy is the accuracy of dosage and the greater margin of safety.

Book Reviews.

A Text-Book of Fractures and Dislocations, With Special Reference To Their Pathology, Diagnosis and Treatment. BY KELLOGG SPEED, S.B., M.D., F.A.C.S., Associate in Surgery, Northwestern University Medical School; Associate Surgeon Mercy Hospital; Attending Surgeon, Cook County and Provident Hospitals, Chicago, Ill. Illustrated with 656 Engravings. Philadelphia and New York: Lea & Febiger, 1916.

Dr. Speed's book is essentially a Chicago production, in spite of the fact that it is published by Lea & Febiger. The writer is associated with Chicago hospitals and a Chicago Medical School, and dedicates his volume to a Chicago surgeon who is well known throughout the United States. In his preface, Dr. Speed acknowledges the helpful co-operation of his colleagues in the hospitals with which he is connected and of members of the Chicago Surgical Society.

The book may, therefore, be taken as an index of the best surgical viewpoint in the great Middle West of the complicated subject of fractures and dislocations. It contains about 900 pages, with more than six hundred illustrations, a very large number of which are line drawings reproduced from tracing of Roentgenograms of an actual case. The illustrations, as a whole, are most satisfactory: anatomical plates are almost all taken from Gray, and the many line drawings of fractures are sharp and clear and show unmistakably and definitely the lesion which each picture is intended to illustrate.

It is a little difficult to speak concisely of the text. The book seems to be a miniature encyclopedia not only of the observer's own cases, but also of the literature. The reviewer feels the absence in many places of a definite statement of the writer's own convictions upon subjects which are at present under discussion. In other words, the author frequently tells what other men do in given conditions, but not always what he does, or what he advises the reader to do. It is a trifle disconcerting to find Whitman's method of treating fractures of the femoral neck dismissed with a few lines; we may again sympathize with Whitman who in a recent article remarked that he had yet to see in medical literature his own method described in his own words.

The book might be described as a consideration of the present knowledge and treatment of fractures, and as such may be recommended rather to practitioners than to undergraduates. The author has evidently spent much time and care upon the subject; has been systematic and thorough in following and codifying the literature; and the results of such conscientious compilations should always be both interesting and helpful to the busy physician.

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ERNEST GREGORY, *Manager*,

128 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

THE MALARIAL ENDEMIC INDEX.

TOGETHER with hookworm infection, the wide prevalence of malaria in the Southern States is, perhaps, the largest factor in retarding the development of those sections. They are the causes of so much of the actual incidence of illness and of disability that the health surveys undertaken from time to time have proved of great value in the determination of causes at the bottom of this state of affairs. While present in the Northern States, malaria does not present so acute a problem. Yet there is little doubt that intensive investigations, somewhat on the scale carried out in the Southern communities, would reveal a much greater prevalence than is now realized. Wherever there are maintained breeding places for the anopheles, whether in the North or in the South, there will malaria flourish. Of course, the country is the place of election because of the greater opportunity for the presence of stagnant water or

marshy land. Clearing away brush, draining pools, ditching marshy land, by depriving the anopheles of breeding places, will of itself eradicate malarial infection. Malarial conditions are simulated in the cities by the stagnant street pool, defective house drains, uncovered water tanks and the like. Yellow fever was eradicated from urban communities by destroying these breeding places for the stegomyia.

In some of the Southern communities as many as 75% of the workers would be incapacitated from malaria. The early seasonal increase of malaria could not, however, be ascribed to the anopheles directly, but rather to the large carrier population, not themselves actively suffering from malaria, but furnishing the mosquito with the infective material. The carriers are the factors that keep the malaria alive in a community, from season to season; and the incidence of malaria in a community must bear a direct relationship to the size of the carrier population. For this reason it is most desirable to determine what percentage of a community having evidence of malarial infection perhaps acted as carriers. Von Eitzdorf (Public Health Reports, No. 331) undertook to determine the endemic index of a community, that is, the percentage of the inhabitants of a community having evidence of malarial infection without manifesting the disease. In his survey of certain communities he found that index to be 13.50. The malarial index must not be confounded with the malarial rate, which refers to the percentage of inhabitants actually suffering with malaria at any time. This he found to be about 5. Both of these classes, the active and the latent—the index and the rate—are active factors in keeping alive and in spreading the infection. On the other hand, only about 1 out of every 4 who harbor the plasmodium harbor the sexual form (gametocyte), necessary to infect malarial-bearing anophelids, who are therefore, at all times potential malaria carriers.

The endemic index is determined by palpation of the spleen, by the parasite method, and, of course, by combined methods. The spleen as an indicator of malarial infection is inaccurate. It is usually palpable in young children, and is present in many other conditions. This method, nevertheless, serves as a broad guide when a great number of individuals are to be included in a survey. The blood or parasite method should be the method of choice whenever pos-

sible. Thick blood smears are better than thin ones because it is estimated that about 25% of the thick smears are not confirmed in thin smears. Moreover, the index ascertained by the blood method is in inverse proportion to that found by the spleen method. That is, where the spleen is found enlarged, the plasmodia are hidden within it and are not found in the blood stream; and, conversely, when still in the blood stream they have not yet found their way into the spleen. It is for this reason that the chronic malarial cachexiae are so hard to treat.

The most accurate index can be determined only after examining all ages. The index of children is best determined by examining them between the ages of 10 and 15. At this time the high mortality of children from other causes will have expended itself and cannot affect statistical considerations here. Yet the highest figure in children is found between the ages of 1 and 3, and lowest between 10 and 15. The tertian type of plasmodium was found twice as frequently as the aestivo-autumnal.

With a high endemic index, that is, a large carrier population, maintained at a high figure by conditions favoring mosquito breeding, the malarial rate, the actual fever cases, must continue to be high and will resist reduction. It can be nothing less than a reflection upon the communal pride of a citizenry that tolerates such conditions.

A METHOD OF ANESTHESIA FOR SOLDIERS.

ONE of the chief reasons why anesthesia cannot be taught to a layman as simply as any complicated mechanical procedure is that it is not mechanical. The actual preparation of the patient, the way to administer ether by the open and closed method, all the mechanical details—can be taught to anyone of sufficient intelligence to grasp the number of details involved, and retain them. Among all the known quantities of the anesthesia formula, however, there is one unknown quantity, x = the patient. And there are a hundred and one variations in the routine, depending on the patient himself.

In the usual urban, general hospital there are many types of patient, but when we come to a military hospital another condition prevails. The foreign medical journals have been laying stress on certain characteristics of the average

soldier, which must be given due weight in dealing with him. As we have no reason to believe that the American soldier will differ very greatly from his trans-Atlantic cousin, it would be well to note in advance a few of the points.

It is generally agreed that the soldier is a pretty healthy specimen. Before he can enter the Army he passes a rigid physical examination. While in the Army he lives mostly an outdoor life, with regular habits and plenty of exercise. As a result English writers agree that soldiers more nearly approach the normal healthy human being than does any other class of patient.

When we come to give anesthesia to a large number of soldiers, as will be the case in the event of any actual fighting, we must remember, first of all, that we are dealing with a normal, healthy adult. Second, most soldiers have a cough and an irritable throat, at least, such has been the case among the soldiers returned to the English military hospitals. The former condition is due to exposure to wet and cold, and the latter to the constant use of tobacco. Bearing these facts in mind, Dr. W. J. McCardie has been working on the standardization of the anesthesia of soldiers. He published his results in the *British Medical Journal* for April 21.

Ether alone he found too irritating to the throat and lungs; chloroform alone was too depressing. He had observed that the addition of a small quantity of chloroform to the ether seemed to combine the advantages of both, so he experimented with various mixtures, chiefly $E_4 C_1$, $E_7 C_1$, $E_{10} C_1$, $E_{18} C_1$, $E_{20} C_1$, and $E_{32} C_1$. In the first two mixtures the chloroform element was too great for safety, while in the last one it was practically negligible. Finally he decided upon $E_{16} C_1$ as the ideal combination, and this he has used in 732 cases out of 843 anesthetized during the year. He has given the name of "mitigated ether" to it. All patients were given one-sixth of a grain of morphine and one one-hundredth of atropine before operation.

Dr. McCardie came to the following conclusions: First, the irritation caused by ether vapor is mitigated by the addition of a small quantity of chloroform; preferably one part to sixteen, except in the case of debilitated patients, when the proportion should be 18 or 20 to 1. Second, this mixture is practically as safe as ether alone. Third, it is rapid. Fourth, it is less irritating than ether.

Here again the experience obtained at such a cost by one of the warring nations can be utilized by us at will. Of course many expert anesthetists will give their service to the country or be developed by the war, and these will have their favorite methods, which in their hands will undoubtedly give excellent results. But there will also be many cases where anesthetics will have to be given by those unfamiliar with them, and a tested method of this sort should be invaluable.

PELLAGRA AS AN ECONOMIC BAROMETER.

SUNDWALL* has lately shown that the tissue alterations in pellagra are the same as those resulting from malnutrition, that the disease is not due to a microorganism, but is a dietary disease along with rickets, scurvy, and beri-beri. This is an interesting and valuable point in dealing with this disease. It brings the treatment of it down to a comparatively simple proposition,—prevention by a balanced diet. Bearing this in mind, it is easier to understand the depression of the pellagra curve last year. We all know that there was a considerable diminution in the disease, but varying explanations were given for it. Thus some observers thought that it might have been a germ-borne disease, continually propagated by the influx of aliens, and explained its 1916 decrease by the more stringent rules against immigration and the decrease of ocean travel. The real reason seems to have been the improved economic condition of the United States, due to the war. Last year employment became plentiful, wages high and the per capita wealth of the country increased. To be sure, there was also an increase in the cost of food products, but not a proportionate one. Thus the class which develops pellagra found itself able to afford a better and broader diet, and the disease immediately decreased.

Accepting this view, we must be on our guard against an increase this year. The rise in the cost of forage has caused many a person who kept one or two cows to sell them, and families have thus been deprived of milk, one of the best pellagra prophylactics. The cost of food continues to soar, especially meat and eggs and leguminous foods in general. This will mean

a restricted diet for many families, and inevitably an increase in pellagra.

So we see that this disease acts as an economic barometer. A decrease in its prevalence means an improvement in the economic condition of the laboring classes and a consequent improvement in their diet. An increase means the reverse. The entrance of the United States into the war, too, will undoubtedly facilitate the anticipated 1917 rise in the pellagra curve.

JOINT VOLUNTARY COMMITTEE ON MEDICAL PERSONNEL FOR MASSACHUSETTS.

THE Committee is sorry to announce that less than 3500 cards have been returned from the doctors of Massachusetts, to whom approximately 5800 cards have been sent. This registration is, unfortunately, low and seriously limits the value of the card catalogue. It is obvious that if 10,000 doctors are needed in the near future, complete catalogues of the doctors in each state must be available. It is, therefore, urged most strongly that every physician who has a card in his possession will fill it out immediately and post it in the enclosed addressed envelope. It is a matter of very great importance. It is, of course, true that the Government possesses the name and address of every physician in legal practice in the United States, but the card catalogue which we are assembling in Massachusetts would facilitate the work of the Government and make it easier to choose the physicians who are best fitted for the necessary military work.

J. B. BLAKE,
For the Committee.

MEDICAL NOTES.

PROSPECTIVE MEDICAL MEETINGS.—Several important medical meetings are to be held in this country this week and next. The twenty-ninth annual meeting of the American Pediatric Society was held at White Sulphur Springs, West Virginia, on May 28, 29 and 30, under the presidency of Dr. Frank Spooner Churchill of Chicago. At the various sessions a series of forty-three papers was presented. The forty-second annual meeting of the American Gynecological Society will be held at Pittsburgh, Pa., on May

*Tissue Alteration in Malnutrition and Pellagra. By John Sundwall. Hygienic Laboratory. Bulletin No. 106. January, 1917.

31, June 1 and 2, under the presidency of Dr. Frank Farrow Simpson of that city. The American Academy of Medicine, the American Medical Association, and the American Medical Editors' Association will all hold their annual meetings in New York City on June 4 and 5. The second convocation of the American College of Physicians will take place at the Hotel Nassau, Long Beach, Long Island, on June 5, 1917. About 90% of all the Fellows who have not entered on duties connected with the war are expected to be present. About fifty physicians of national repute will be admitted to Fellowship.

WAR NOTES.

HARVARD MEDICAL UNIT.—The following item relative to the Harvard Medical Unit, appeared in a recent issue of the *Lancet*.

"Dr. Hugh Cabot and Dr. George C. Shattuck, of Boston, U. S. A., with 14 doctors and 17 nurses, arrived in London last week *en route* to France to reinforce the Harvard University Unit which has charge of one of our general hospitals. The unit is under the command of Sir Alan Perry, who met the new detachment. Dr. Cabot and Dr. Shattuck have already served a term at the hospital. It was rightly felt in the United States that to brave the perils of submarines was a fine action, and the unit had an enthusiastic send-off at Boston."

ACCEPTANCE OF HOSPITAL UNIT FOR NERVOUS DISEASES.—Surgeon-General W. C. Gorgas has written as follows to Governor McCall in acceptance of the offer to organize a unit for the care of nervous diseases among soldiers.

"My dear Governor McCall.—In reply to your telegram of the seventeenth instant, I desire to thank you for your tender of the hospital unit for the care of soldiers suffering from nervous and mental diseases, and to say that it will be used in accordance with the plans submitted by the National Committee for Mental Hygiene, which committee has kindly taken charge of the supervision of all such units organized in the United States.

I am, my dear Governor, with kindest regards,

Yours very sincerely,

(Signed)

W. C. GORGAS,

Surgeon-General, U. S. Army."

FREEDOM OF CANADIAN TROOPS FROM TYPHOID.—The efficacy of anti-typoid inoculation is again evidenced by the freedom from typhoid fever which has prevailed among troops of the Canadian Expeditionary Force in Canada. This freedom is commented upon as follows in the issue of the *Lancet* for March 31:

"The Provincial Board of Health for Ontario has supplied to date all the typhoid and paratyphoid vaccine used by the entire Canadian Expeditionary Force, about 450,000 men.

In all, nearly 600,000 doses have been supplied free of cost. The Department of Militia and Defense have just announced that for the 12 months ending Dec. 31, 1916, 167 cases only of typhoid fever were reported as having occurred among the thousands of men of the C. E. F., and this notwithstanding the fact that typhoid fever is a disease especially affecting young adults from 17 to 30 years of age, and a disease which is endemic in all parts of Canada. This comparative freedom on the part of the force is seen to be most striking when it is recalled that, during the Boer war, one man out of every nine in the British forces in South Africa was invalided through this disease, and that in the Spanish-American war, of 107,000 men in the camps at Tampa, Florida, and elsewhere, who had not left the shores of the United States, 20,000 contracted the disease. The remarkable change can be attributed only to the process of inoculation, and Dr. John W. S. McCullough, chief medical officer of health of the Province of Ontario, may be congratulated on the good results of systematic work."

A PREMONITION OF THE RED CROSS.—In the issue of *La Medicina Pratica* for February 28, 1917, is an item, quoted in the *British Medical Journal* of March 31, describing a curious medieval premonition of the foundation of the Red Cross, which the author considers to have had its origin in the action of the Venetian Republic after the battle of Fornovo on July 6, 1495, when the army of Charles VIII, retreating to France, narrowly escaped destruction in the Apennine passes:

"In a narrative written in the form of a diary, an eye-witness, Alessandro Benedetti, who served as a surgeon with the Venetian army, says there were many Frenchmen among the wounded, but all were treated by the Venetian doctors at the public expense. Melchior of Treviso, procurator of the army, had those who could not keep up in the march carried to Parma, supplied them with money in the name of the Senate, and provided surgeons at a liberal scale of pay. 'The good jovial old man,' says Benedetti, 'now Vice-General of the fleet, went round the beds and exhorted the patients to be of good cheer; among them were wounded Frenchmen.' The people of Parma marvelled greatly at the clemency shown by the Venetians toward enemies. This, says Paolo Pica, the writer of the article, which first appeared in the *Rivista Ospedaliera* in 1911, is the first instance of such humanity recorded in history. When, in 1581, Alessandro Farnese, Duke of Parma, made terms for the capitulation of Tournay, allowing the garrison to come out with the honors of war and undertaking to take care of such wounded enemies as could not be removed, it is very probable that, remembering the noble example set by the Venetians eighty-six years before, he was moved to give it for the first time

a more concrete form by embodying it in a formal treaty. On this action is based the claim put forward for Italy to have initiated a radical reform of the barbarous customs of war, which found its consecration in the Geneva Convention, and its practical realization in the foundation of the Red Cross in 1864."

BOSTON GIFT OF AMBULANCE UNIT.—The gift of Mrs. William Weld, Mrs. Charles C. Weld and Miss Mary Weld, of Boston, of a unit for service in the ambulance corps in France, is in readiness for service, and under the command of Basil K. Nottell of Larchmont, N. Y., left, on April 30, for France. The cars will comprise Section 17 of the American field ambulance service. Each car bears the inscription, "From citizens of Boston, Mass., U. S. A., in the cause of Democracy, Liberty and Humanity—the Dr. Charles Goddard Weld Ambulance Section." The section is comprised of twenty-five members, from Chicago, Wisconsin, Cornell and other universities.

AMERICAN SURGEONS IN FRANCE.—The need of surgeons among British and French forces will be met by American surgeons who will go to France as members of the medical corps of the United States Army. This was announced after a conference between Secretary Baker and Major Dreyfus, medical officer of the French commission. The general medical board of the Council of National Defense has arranged that one thousand surgeons, picked by the American College of Surgeons, may be called for such service at any time.

COURTESY TO A GERMAN PHYSICIAN.—A gratifying instance of American courtesy to an interned physician of an enemy country occurred in the recent release of Dr. Paul Wegeman from the internment camp at Galloup's Island. Dr. Wegeman, who was surgeon of the Hamburg-American S. S. *Cincinnati*, has been in ill health and is released on this ground. He has been granted safe conduct by the department of state, and sailed a few days ago from New York for Holland, in company with the Austrian and Turkish consular agents who were leaving this country.

MASSACHUSETTS STATE GUARD.—On May 1 the headquarters of the Massachusetts Committee of Public Safety announced that petitions have already been received from thirty cities and towns in this Commonwealth for permission to organize state guard units to serve for the duration of the war. Five of these petitions have been granted,—in New Bedford, Clinton, Malden, Fitchburg and Newton. Governor McCall has appointed Dr. William A. Brooks as chief surgeon of the state guard with the rank of Lieutenant-Colonel, and has made the following nominations for the medical and surgical staff to

serve under him: Surgeons, Dr. Hardy Phippen, Salem; Dr. C. E. Durant, Haverhill; Dr. T. B. Smith, Springfield; Dr. L. F. Woodward, Worcester; Dr. P. Truesdale, Fall River; Dr. G. DeN. Hough, New Bedford; Dr. F. H. Thompson, Fitchburg. Assistant surgeons, Dr. Donald V. Bates, Brookline; Dr. W. E. Browne, Boston; Dr. Harold G. Giddings, Allston; Dr. G. W. Morse, Boston; Dr. H. F. Sheldon, Boston; Dr. B. E. Sibley, Brookline; Dr. E. A. Supple, Boston. Physicians: Dr. J. W. Dewis, Boston; Dr. T. F. Harrington, Boston; nose and throat surgeon, Dr. G. L. Tobey, Jr., Boston; dental surgeon, Dr. K. H. Thoma, Boston; roentgenologist, Dr. A. W. George, Boston; ophthalmic surgeon, Dr. R. T. Loring, Boston.

TWO NEW UNITS FOR FOREIGN SERVICE.—The New York Presbyterian base hospital unit No. 2 of the American Red Cross has sailed for France, commanded by Elbert E. Persons of the Medical Corps of the United States Army. Dr. George E. Brewer is director of the unit, which includes twenty-three doctors and sixty-five nurses. The hospital will be equipped to care for five hundred cases at a time.

Dr. Hugh H. Young, director of the James B. Brady Urological Institute of Johns Hopkins Hospital, has been commissioned Major and will leave shortly for France with a staff of surgeons who have specialized in urology. The group will form a hospital base unit to take care of cases of urological diseases.

TRAINING WAR DENTISTS.—The Trustees of the Forsyth Dental Infirmary, Boston, have established a course for the instruction of dental surgeons for the Dental Reserve Corps of the United States Army. It is estimated that more than one thousand dental surgeons will be required within one month. The first course began on May 28, and will cover a week's time. It is hoped to recruit one thousand dental surgeons within a month. Representatives of the surgeon-general will examine candidates for the corps. In establishing the course, the infirmary trustees are complying with a request from the dentistry committee of the medical board of the Council of National Defense.

ARMY MEDICAL ASSIGNMENTS.—The following regular army medical officers have been assigned to command the six American Red Cross Base Hospital Units, whose departure for France was noted in a recent issue of the JOURNAL: Maj. Robert U. Paterson, chief of Red Cross Bureau, No. 5 Hospital, from Harvard Medical School, with Dr. Harvey Cushing as director. Maj. Elbert E. Persons, No. 2, New York Presbyterian Hospital; Dr. George E. Brewer, director. Maj. Harry L. Gilchrist, No. 4, Cleveland; Dr.

George W. Crile, director. Maj. Matthew A. Delaney, No. 10, Pennsylvania Hospital, Philadelphia; Dr. Richard H. Harte, director. Maj. James D. Fife, No. 21, Washington University Hospital, St. Louis; Dr. Frederick T. Murphy, director. Maj. Christopher C. Collins, No. 12, Northwestern University; Dr. Frederick Besley, director.

The following army medical officers have also been assigned to duty in the French military hospital at Ris Orangis: Maj. William L. Keller, Captain Daniel P. Card and Captain George M. Edwards. Maj. Robert M. Culler is assigned to duty in the French Hospital at Passy, France. Those already departed for foreign hospitals are Capt. Stanhope Bayne-Jones and Lts. Benjamin M. Vance, William D. Jack, Percy Musgrave, George L. Stickney, Everett D. Plass and John A. C. Colston.

COMPLETION OF RED CROSS SUPPLIES.—The Metropolitan Chapter, American Red Cross, has completed its stock of supplies for the three base hospitals organized in Boston. The cost of supplies for each unit is more than \$25,000. In making these supplies the Red Cross has had the coöperation of numerous local branches, the Special Aid Society, and the surgical dressings committee of the National Civic Federation. The supplies are in the possession of Col. J. C. R. Peabody, director of Red Cross supply dépôt No. 1, and will be immediately available when the need for them arises. During the last year large consignments of hospital supplies have been forwarded to the Allies. Seventy boxes have been sent to France, fifteen to Italy and thirteen to England.

A TUBERCULOSIS WAR PROGRAM.—The Boston Association for the Relief and Control of Tuberculosis has announced the plan of the National Association for the Study and Prevention of Tuberculosis for mobilizing the country's resources for the prevention of tuberculosis among enlisted soldiers and sailors.

In its memorandum to the local Association, the national society points out that it has undertaken this far-reaching work at the request of the Council on National Defense.

The keynote of the plans of the National Association is practical service, with as little duplication of effort as possible. The bulletin, for example, urges all local societies to leave the matter of relief for tuberculous soldiers and their families to the civilian relief committees of the American Red Cross which are being organized in connection with chapters. Where there are no Red Cross chapters, local tuberculosis agencies may take up the question of civilian relief with the Department of Civilian Relief in Washington.

Visiting nurses engaged in tuberculosis work, either exclusively or on part time, to the num-

ber of more than 5,000, will be made available for home treatment and for preventive educational work among the enlisted men.

Educational work, the furnishing of literature to men in camps, the furnishing of lecturers, motion picture exhibits and other educational equipment for men in camp, and coöperation with federal and state officials in furnishing special placards and certain sanitary supplies which the government would not ordinarily furnish, are among the concrete suggestions made by the National Association to the local society.

"No other groups in the United States are so familiar with the principal men who are qualified to diagnose and handle tuberculosis as the anti-tuberculosis association, both state and local," says the National Association. "These organizations will be called upon to suggest men who can qualify as experts, particularly in the diagnosis of tuberculosis. As the demand for enlistment increases, the experience of other countries at war demonstrates that the supply of skilled physicians who are competent to treat and diagnose tuberculosis will be taxed to the limit. Every effort will be made to protect the enlisted men of the United States Army from the fatal experience of some European armies in relation to tuberculosis.

Whether this government is called upon to send a large expeditionary force to Europe or not, the mobilization of hundreds of thousands of troops will without doubt greatly increase the seriousness of the tuberculosis problem both in the military and in the civilian population. Anti-tuberculosis associations are urged, therefore, not to curtail their normal functions any more than absolutely necessary, but, on the other hand, to press forward, utilizing the interest as a channel for focusing, more clearly than ever before, the attention of the public upon the problem of tuberculosis."

The Executive Committee of the Boston Association endorses this program of the National Association. The Executive Committee also goes on record as in favor of War Prohibition. The Committee has voted to offer a large part of the land (20 acres) on which Prendergast Camp is located in Dorchester to the Government or the Massachusetts Committee on Safety for their use.

ARRANGEMENTS FOR CARE OF WOUNDED IN NORTHEASTERN DEPARTMENT.—At a conference held between Boston hospital executives and Major James F. Hall, assistant department surgeon, plans were made for care of American wounded brought from European battlefields to New England. A census is to be taken of all available hospital facilities, as well as a list of all public and private buildings which can be turned into hospitals, and a list of places where soldiers may finally recover from their wounds. While every department will take care of its

own soldiers as far as possible, the Northeastern Department will give temporary care to wounded soldiers landing at its ports.

ARRIVAL IN ENGLAND OF HOSPITAL UNITS.—The first of the six Red Cross Hospital Units to go to France for war service has arrived safely in England. The unit comprises about 300 physicians, twenty army officers, sixty nurses and more than two hundred attachés. This unit will be the first officially sanctioned by the United States Government to carry the American flag to the battlefields of France since the United States entered the war. After a brief stay in England, the unit will be sent to the continent; where it will take charge of a base hospital behind the British front. The hospital will have accommodations for five hundred patients and be fully equipped by the British hospital service.

APPOINTMENTS OF MEDICAL OFFICERS.—The following men in the Northeastern Department have received appointments to the Officers' Reserve Corps:—

Medical Corps with Rank of Major—John Warren, Horace D. Arnold, Theodore Smith, Richard C. Cabot, Robert B. Osgood, Fred B. Lund, Boston; Harvey Cushing, Brookline; Roger I. Lee, Cambridge; Howard W. Beal, Worcester.

Medical Department with Rank of Captain—Charles B. Tellings, Timothy Goulding, William J. Mixer, Z. B. Adams, John T. Bottomley, James S. Stone, Arthur E. Austin, Boston; Lester Winslow Lord, West Ossipee, N. H.; Warren S. Kershner, Bath, Me.; Harvey A. Kelley, Winthrop; Alfred W. Maskell, Portland, Me.; Herbert W. Taylor, Brattleboro, Vt.; Charles Whelan, Hingham; Frank W. George, Worcester; Walter R. Weiser, Springfield; Richard Blackmore, Norfolk, Conn.; Isaac S. F. Dodd, Pittsfield.

Medical Department with Rank of First Lieutenant—James H. Means, Augustus Riley, Charles B. Spruit, Boston; Clarence E. Burt, New Bedford; Harry P. Burns, Parker M. Cort, Ernest Leland Davis, John M. Mahoney, James H. Quinn, E. Tenney Smith, Philip Kilroy, Springfield; Nathan Pulsifer, Lowell; Fred T. Keys, West Leverett, Me.; Blake F. Donaldson, Milford, N. H.; Harold H. Arnold, New Haven, Conn.; Charles E. Cook, Jr., South Berwick, Me.; David E. Dolloff, Biddeford, Me.; John H. C. Gallagher, Chicopee; Matthew H. Griswold, Kensington, Conn.; Lewis Brooks Hayden, Livermore Falls, Me.; Louis E. Mannix, Chicopee Falls; John S. Milliken, Readfield, Me.; Pierce Bergeron, Manchester, N. H.

ORGANIZATION OF HOSPITAL AND AMBULANCE COMPANIES.—The war department has authorized the formation of seven hospital companies and seven ambulance companies in Massachusetts. The hospital companies will include

seventy-three enlisted men and six officers and the ambulance companies will include one hundred fifty men and five officers. The seventy-seven officers to be commissioned will be physicians. All the units will be attached to the French expeditionary force and will be organized and sent to the front as soon as possible.

PHYSICIANS' CASUALTIES IN THE BATTLE OF THE SOMME.—In moving recently the second reading in the House of Lords of the bill to review military exemptions, the Earl of Derby, British Secretary of State for War, announced that in the Battle of the Somme alone over four hundred physicians were either killed or wounded, and that the British Army was at least lamentably, if not critically, short of medical men.

PRESBYTERIAN HOSPITAL AND COLUMBIA UNIVERSITY UNIT.—The personnel of the Presbyterian Hospital and Columbia University Base Hospital Unit, which has recently sailed for France, has been announced as follows:

Drs. George Emerson Brewer, Homer Swift, William Darrach, Sidney R. Burnap, Fordyce B. St. John, Alex. McCreery, John A. Peters, Benjamin R. Allison, William F. Cunningham, William Barclay Parsons, Robert Kennedy, William C. Woolsey, Gerhard Cocks, Armitage Whitman, Willard B. Soper, Louis Casamajor, Alwin M. Pappenheim, A. R. Stevens, Roderick Grace, Austin Hobbs, Malcolm McBurney, Henry S. Dunning and E. H. Raymond.

UNIVERSITY OF MINNESOTA FIELD HOSPITAL UNIT.—It is announced that the Mayo Foundation of the University of Minnesota has offered to the United States Government for foreign service a fully equipped field hospital unit to be headed by Dr. William J. Mayo. This organization is to be known as the University of Minnesota Field Hospital Unit and is to have five hundred tented beds of the latest model, full surgical apparatus and a portable shelter as an operating room. Other members of the personnel of this unit are: Dr. E. H. Plummer, Dr. Charles Judd, Dr. Frank C. Todd, Dr. H. Robertson and Dr. S. Marx White.

AMERICAN SURGEONS FOR SERVICE IN EUROPE.—It is announced that the American College of Surgeons has offered to send to Europe for service with the allied armies one thousand American surgeons. The deans of forty-six medical schools, after conference with the general medical board of the Council of National Defense, have agreed to continue instruction during the summer without shortening courses, so as to furnish new graduates to take the place of physicians from schools and hospitals, who will thus be freed for army service.

ROCKEFELLER FOUNDATION.—On May 4 it was announced in New York City that the Rockefeller Foundation has appropriated \$475,000 to

be spent in the United States for medical research, and \$400,000 for the continuation of war relief activities in Europe.

"To aid the work of the Young Men's Christian Associations in the training camps to be established for the army and navy, \$200,000 has been appropriated by the foundation. A budget of \$3,000,000 is sought by the National Ward Work Council of the Y. M. C. A. This work will be similar to that carried on by the international committee of the Y. M. C. A. in war camps abroad and in American camps on the Mexican Border last year.

An appropriation of \$200,000 also has been made to the Rockefeller Institute for Medical Research for the Carrel Hospital to be established during the next few months in connection with it. This model hospital of 100 beds under the direction of Dr. Alexis Carrel, is to be used to teach the new methods of surgical treatment for infected wounds, worked out by Dr. Carrel and Dr. Dakin in France. American military surgeons and doctors will thus have the benefit of the three years' experience in war surgery abroad.

The Rockefeller Institute receives a further appropriation of \$60,000 for instructing military and other surgeons in new methods of diagnosis, for the preparation of sera, similar to those it has sent abroad, for use in army camps, and for the purpose of finding improved means of treating peritonitis and shock.

Funds also are provided for a thorough study, abroad, of mental diseases among soldiers, and the kinds of provision needed for their care at the front and in base hospitals. This investigation is to be undertaken by Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, who is to supervise American psychiatric hospitals to be established by the Government. Dr. Salmon will develop methods of receiving, classifying and distributing the various kinds of mental and nervous disorders.

To provide a building for the naval psychiatric hospital, to be erected on the grounds of the United States Marine Hospital in New York, the foundation has appropriated \$13,000. The buildings are to be erected by the National Committee for Mental Hygiene and operated by the United States Public Health Service.

During the month of April the foundation made gifts and pledges for European war relief amounting to \$450,000.

This brings the total appropriations for European relief, as previously announced, to \$4,181,952."

NEED OF AMERICAN PHYSICIANS IN THE WAR.—Report from Chicago states that on May 8, Dr. Franklin H. Martin of that city, chairman of the medical division of the Council of National Defense, issued the following statement and appeal addressed to the doctors of America.

"With our country entering the war, the responsibility for which we as doctors have been preparing, is now upon us. The Englishmen and Frenchmen, now our Allies, have come to tell us their problems. Their need for medical officers is acute. Their civil population is without adequate medical protection and the ravages of war in the fighting line have been unusually severe in the destruction of medical officers and ambulance attendants. Two thousand medical officers for France and England and five thousand ambulance attendants, if immediately available, would scarcely fill their requirements."

"We have listened to their appeal and the council is seeking to help them as promptly as possible. The Secretary of War, the Chief of Staff and the Surgeon General have authorized and are now executing the following plan:

"(A)—General Gorgas is mobilizing and equipping in groups of two hundred doctors who are now members of the Medical Officers' Reserve Corps. A group of two hundred will sail each month, the first leaving within the next three weeks.

"(B)—Six Red Cross base hospital units with twenty-four doctors, nurses and a supporting personnel, aggregating 196 each, have been ordered by the War Department to France for immediate service.

"(C)—One hundred and ten hospital units with approximately 3000 automobile ambulances and 5000 men asked for by France, will be dispatched within the next three weeks.

"These are the modest requests. The medical profession is prepared to meet the call and treble or quadruple it if need be. Every doctor under fifty-five years of age who has not responded to the call to enroll in the Medical Officers' Reserve Corps should do so at once. Every doctor who is already a member of the Medical Officers' Reserve Corps or an applicant should place himself at the disposal of the Government through the surgeon-general's office. This will enable the surgeon-general to utilize the younger men for active duty at the front and assign the older men now engaged in teaching medical students and in the care of civilian population at home, to pursue the work for which they are best fitted and maintain a normal supply of medical graduates.

"The medical profession has been honored with the first call by those who have been fighting our cause. Let us respond generously."

According to Maj. Philip W. Huntington of the Army Medical Corps, the Medical Reserve Corps is lacking ten thousand men to fill adequately its ranks, and the Medical Corps, 1300 men. A rally of physicians was held in New York on May 10 in the endeavor to induce medical men to enlist in the Corps.

An overwhelming number of nurses will also be required to take care of the first half million troops that America sends abroad.

WAR COUNCIL OF THE RED CROSS.—President Wilson has created a war council of the Red Cross whose head is Mr. Henry P. Davidson of J. P. Morgan & Co. In accepting the position, Mr. Davidson offered the facilities of the Morgan Company to the Red Cross for the duration of the war. The other members of the council will be former President Taft, Charles D. Norton, Cornelius N. Bliss, Jr., and Grayson M. P. Murphy of New York, Edward N. Hurley of Chicago and Eliot Wadsworth of Boston. In announcing his appointments President Wilson states:

"I have today created within the Red Cross a war council to which will be entrusted the duty of responding to the extraordinary demands which the present war will make upon the service of the Red Cross, both in the field and in civilian relief. The best way in which to impart the greatest efficiency and energy to the relief work which this war will entail will be to concentrate it in the hands of a single experienced organization which has been recognized by law and by international convention as the public instrumentality for such purposes. Indeed, such a concentration of administrative action in this matter seems to me absolutely necessary, and I hereby earnestly call upon all those who can contribute either great sums or small to the alleviation of the suffering and distress which must inevitably arise out of this fight for humanity and democracy, to contribute to the Red Cross. It will be one of the first and most necessary tasks of the new war council of the Red Cross to raise great sums of money for the support of the work to be done, and done upon a great scale.

"I hope that the response to their efforts will be a demonstration of the generosity of America and the power of genuine practical sympathy among our people that will command the admiration of the whole world."

The Boston Metropolitan Chapter of American Red Cross was at once notified by Mr. Wadsworth to begin raising funds for the relief work contemplated. Allston Burr, chairman of the Boston chapter, has begun the work in Boston of collecting the greatest war relief fund ever undertaken in America. The funds raised are to be deposited in a special account to be known as the Red Cross War Fund and will be transmitted to national headquarters as required.

MEDICAL STUDENTS IN THE WAR.—The Medical School Committee of the Medical Board of the Council of National Defense has recently made the following report with regard to the duties of medical students during the war.

"In your effort to solve the urgent problem before this board and assist the surgeon-general in supplying an adequate number of medical officers for the Army and Navy, it is important that this country should not repeat England's blunder at the outbreak of the war in

permitting the disorganization of the medical schools either by calling the faculties into active service or sanctioning the enlistment of medical students into any of the line organizations. Ordinary foresight demands that we face the possibility that the war upon which we have entered may last for years. Medical schools to supply trained men for the future as well as the present emergency must be kept in active operation under any circumstances. While aiding to the uttermost in overcoming the present shortage of men, the necessity of keeping the source of supply open emphasizes the importance of conserving our raw material. Therefore, men now in college, looking forward to medicine as a career should be made to understand that it is their patriotic duty to the nation at this time to continue their studies and enroll in the medical school of their choice. Furthermore, no medical student who has not completed three years of medical work should be permitted to give up his course, as the country needs his trained and not his untrained service.

There are, however, ways in which the medical schools can help the present situation. The following suggestions are made for your consideration and action:

1. Medical schools should be prepared to graduate senior medical students promptly in case of need. The faculties should urge all graduates who can be relieved of their obligations as internes in civil hospitals to enroll in the medical corps of the Army and Navy.

2. Medical schools should be encouraged to consider as a form of service, the Italian plan by which base hospital units can be organized through the Red Cross. These military hospitals carry with them the clinical faculty and students as medical personnel. This type of organization meets two ends—practical help can be rendered to the Army or the Navy in time of war and instruction may be continued at the base. This permits the graduation of men directly into the junior grades of the Army after the most practical form of military instruction.

3. Fourth-year students may be allowed to substitute, in special cases, service in a base hospital for the fourth year in the hospital at home when opportunities are offered for instruction in such military institutions.

4. Medical schools that do not adopt the Italian plan should be prepared to reduce the faculties to the minimum required for routine work and enroll all men so liberated in the Medical Officers' Reserve Corps.

To put these recommendations into immediate effect, the committee suggested that the Council of National Defense send a telegram to the deans of all medical schools, urging that all medical students until the fourth year is reached should be discouraged from enlisting at present in any line or sanitary organization; and another telegram to the presidents of all

colleges and universities saying that national safety demands that all undergraduates planning to study medicine should enroll in the medical school of their choice at the earliest possible moment."

WAR RELIEF FUNDS.—On May 26 the totals of the principal New England war relief funds reached the following amounts:—

Belgian Fund	\$609,975.28
French Wounded Fund	228,288.67
Armenian Fund	183,758.31
Serbian Fund	121,485.66
Permanent Blind Fund	114,739.90
British Imperial Fund	99,547.00
Surgical Dressings Fund	91,737.97
Italian Fund	41,330.87

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending May 26, 1917, the number of deaths reported was 212, against 273 for the same period last year, with a rate of 14.31 against 18.72 last year. There were 25 deaths under one year of age, against 51 last year, and 70 deaths over 60 years of age, against 70 last year.

The number of cases of principal reportable diseases were: diphtheria, 64; scarlet fever, 29; measles, 218; whooping cough, 22; typhoid fever, 3; tuberculosis, 71.

Included in the above were the following cases of non-residents: diphtheria, 3; scarlet fever, 2; measles, 1; whooping cough, 1; typhoid fever, 1; tuberculosis, 3.

Total deaths from these diseases were: diphtheria, 4; measles, 5; tuberculosis, 19.

Included in the above were the following deaths of non-residents: diphtheria, 1; measles, 1; tuberculosis, 2.

SCARLET FEVER IN CLIFTONDALE.—Owing to the prevalence of scarlet fever in Cliftondale, five public schools were closed and fumigated. Five children and one man have been removed to the Lynn Contagious Hospital. Two children have already died of the disease.

THE MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.—The next meeting will be held at the Hotel Brunswick, at 8 p.m., on Friday, June 1, 1917. A paper on "Writer's Cramp and Allied Affections" by Dr. Douglas Graham, will be read. Mr. John Anderson has kindly consented to give some humorous readings in the Scotch dialect. Please be prompt and thus show your appreciation.

DOUGLAS GRAHAM, M.D., *President*,
MRS. MABEL F. WALKER, *Secretary*.

BOSTON DISPENSARY.—In its 120th annual report, the Boston Dispensary states that it has cared for 40,000 men, women and children during the past year. Among these patients were 15,000 babies or little children and about 20,000

wage-earners and mothers of families. Evening clinics have been developed to provide for people who must lose wages if they come for medical attention in the daytime. In caring for 15,000 babies last year, the services of the dentist, the throat specialist, the oculist and the orthopedist were all enlisted. School children in large numbers were brought in by the school nurses for treatment in remedying physical defects. The increased prices of medical and surgical supplies, as well as the soaring prices of drugs, threatens to handicap the work of the Dispensary in the coming year unless its friends rally to its support. The board of managers is making an especial appeal for aid in order that the productive efficiency of the community may not suffer in these critical times because of the ill health of the wage-earners. Contributions should be sent to Ashton L. Carr, vice-president of the State Street Trust Company, who is treasurer of the organization.

NON-PULMONARY TUBERCULOSIS IN MASSACHUSETTS.—The investigation of the facilities for treatment of non-pulmonary tuberculosis, provided by the State, has resulted in the following conclusions:

1. The actual need for special institutions for the treatment of cases of non-pulmonary tuberculosis is not at present recognized by the majority of the medical profession.
2. General use has not been made of the already available beds in existing institutions.
3. Within the next two years, the number of available beds for pulmonary tuberculosis cases will be increased by over 900 beds, when the cities of over 50,000 population carry out their contemplated plans, and the county commissioners discharge the duties imposed upon them by the Legislature of 1916. The completion of these hospitals should give the opportunity so much needed for the segregation of different classes of tuberculosis cases in the various private, municipal and State sanatoria, which segregation may have some bearing on this subject.
4. The Hospital School at Canton, and, to a limited extent, the Hospital Cottages at Baldwinville, are already organized, equipped, and at work with good results along lines most needed by the non-pulmonary tuberculosis cases. By extending their work, the present needs for the care of non-pulmonary cases can be met.
5. Until such time as the whole work for tuberculosis cases in general has adjusted itself to the increased facilities that the next two years will furnish, it would not be advisable to consider the building and organizing of any new institution for the non-pulmonary tuberculosis cases.

DR. WALCOTT AND THE CAMBRIDGE HOSPITAL.—The trustees of the Cambridge Hospital have recently adopted the following minute on the occasion of the resignation of Dr. Henry P.

Walcott after many years of service as president of the board:

"The trustees of the Cambridge Hospital learn with deep regret that, at the annual meeting of the corporation, Dr. Henry P. Walcott positively declined reelection as its president or as trustee. While we cannot but admit that Dr. Walcott's long and active devotion to the institution justly entitles him to relief from the cares and responsibilities of his official duties, we one and all feel that his withdrawal takes from our board one in the highest degree qualified to assist in the administration of its affairs; and we also feel that the occasion should not be allowed to pass without some recognition, inadequate though it may be, of his many years of valuable service.

From the records it appears that Dr. Walcott was one of the original trustees and charter members of the hospital, and has served as trustee for more than 46 years. It further appears from the records that he served as secretary of the board from May 7, 1874, until April 6, 1892, and as president from the latter date until April 4, 1917. During his eight years' service as secretary he was absent from only seven meetings, and this fact may be taken as a fair indication of the faithful and unremitting loyalty which has always characterized his interest in the hospital.

Conversant with all the details of its inception and growth, equipped with a medical education, gifted with good, sound common sense, familiar by practical experience with the multifarious questions pertaining to the health of the general public, and intimately connected with other and larger institutions of a similar nature, he was always fruitful in suggestion, wise in counsel, and effective in administration, in everything tending to enlarge and improve the scope of our work. In his retirement from active connection with the hospital we feel that we have lost a sagacious leader, a valuable adviser and an indefatigable co-worker, but we are confident that we may still count him one of the best friends of the hospital, and we wish for him the enjoyment of his well-earned rest for many years."

PROGRESS OF SEVERAL FUNDS.—The fund for the New England Hospital for Women and Children reached, on May 6, the sum of \$67,281.96.

The Infantile Paralysis Fund, raised to aid the Harvard Infantile Paralysis Commission in its campaign against the disease in Massachusetts, has reached \$10,484.95.

The board of lady visitors of the Boston Lying-in Hospital announce that they have received contributions totaling \$41,406.58 for the erection of the new hospital.

SMALLPOX IN WORCESTER.—On May 14 three new cases of smallpox had been reported to the

Worcester Board of Health, making a total up to that time of thirteen cases.

LOBAR PNEUMONIA NOW REPORTABLE.—The Massachusetts State Department of Health, at a meeting held April 3, 1917, voted that the list of diseases declared dangerous to the public health within the meaning of sections 49, 50 and 52 of Revised Laws 75, as amended, be further amended by adding lobar pneumonia, beginning May 1, 1917, so that said list now reads as follows:

Actinomycosis, Anterior poliomyelitis, Anthrax, Asiatic Cholera, Chicken-pox, Diphtheria, Dog-bite (requiring antirabic treatment); Dysentery:—(a) Amebic, (b) Bacillary; Epidemic Cerebrospinal Meningitis, German Measles, Glanders, Hookworm disease, Infectious diseases of the eye:—(a) Ophthalmia Neonatorum, (b) Conjunctivitis, (c) Trachoma; Leprosy, Malaria, Measles, Mumps, Pellagra, Plague, Pneumonia (lobar only), Rabies, Scarlet fever, Septic sore throat, Smallpox, Tetanus, Trichinosis, Tuberculosis (all forms), Typhoid fever, Typhus fever, Whooping cough, Yellow fever.

AMERICAN ACADEMY OF DENTAL SCIENCE.—At the annual meeting of the American Academy of Dental Science held in Boston on May 16 the following officers were elected:

President, Dr. Henry H. Piper; vice-president, Dr. William Riee; recording secretary, Dr. Maurice E. Peterson; corresponding secretary, Dr. Harry W. Haley; treasurer, Dr. Charles A. Jameson; outside guard, Dr. Martin B. Dill; inside guard, Dr. Leroy M. S. Munroe.

The executive committee comprises Dr. Charles A. Parkhurst, Dr. Carl A. Lundstrom and Dr. Edward M. Kent.

Dr. W. E. Borden and Prof. G. A. Bates of Tufts Dental School were appointed a committee to see what could be done in the line of dentistry to help qualify recruits in the United States army for service, and also to offer the resources of the academy to volunteers and members of all branches of the service.

BABY HYGIENE ASSOCIATION.—The eighth annual report of the Baby Hygiene Association covers a period ending March 1, 1917. Two new stations have been added during the year, one at the Health Unit at 17 Blossom Street, West End. This Health Unit, under the direction of the Boston Health Department, afforded the opportunity for the different organizations doing public health work in this district to have their headquarters under one roof. The other station was opened at Grove Hall, a district in which there was great need of such service, but which had been inaccessible to the stations already established. The use of rooms was given the Association in the building of the Young Men's Hebrew Association and it was through the interest and financial support of the Jewish people that the new station was made possible. The report goes on to state:

"The term 'milk' station becomes each year less and less descriptive of the work our stations are doing. Last year 52% of the babies registered were entirely breast fed; these babies came to us only for the advice and instruction of our physicians and nurses. Milk is now dispensed at only eight of the thirteen stations, and the amount sold is getting less each year. Mothers have learned that 'baby' milk is simply another name for clean milk; and they have also learned that, for well babies at least, complicated laboratory modifications are unnecessary and that they themselves are able to prepare their babies' milk in the home. A constantly decreasing amount of milk modified at the laboratory is sold; last year only 2% of the babies registered used this milk, and these were, for the most part, babies partially breast fed."

CAMBRIDGE MUNICIPAL HOSPITAL.—The new Cambridge Municipal Hospital will be formally opened on May 28, and on June 1 patients will be admitted. The medical profession is invited to inspect the Hospital on May 28 and the public on May 29.

LEPROSY IN SALEM.—A case of leprosy occurring in a leather worker, who came from Constantinople to this country less than a year ago, has been discovered in Salem. The diagnosis was made at the Massachusetts General Hospital and the man will be removed to Penikese Island.

THE PASSING OF TYPHOID FEVER IN MASSACHUSETTS.—The Public Health Bulletin of the State Department of Health of Massachusetts, in its April number, makes the following statement regarding the passing of typhoid fever in this state.

The typhoid death rate for the State for 1916 shows a remarkably low figure, 4.5 per 100,000, the lowest figure that Massachusetts has ever known. The persistent decrease in the past three decades has been due to many sanitary methods carried out in the State,—primarily to the prevention of sewage pollution of public and private water supplies, supplemented in later years by such agencies as the increasing pasteurization of milk, inspection of the production of milk, investigation into causes of outbreaks, food inspection and the use of laboratory facilities in confirming diagnoses and in detecting carriers.

Typhoid vaccine is now being used extensively by many physicians as a prophylactic. Local authorities are increasingly urging the necessity for carrying out hospitalization of cases because of the difficulty of preventing its spread to other members of the family when it is treated in the household. A recent instance may be cited where four cases of typhoid fever followed a primary case that was being cared for at home, one of the four secondary cases being the nurse. Immunization of members of

a household by typhoid vaccine is to be encouraged in families where a case of typhoid occurs, as this will prevent the appearance of numerous secondary cases.

When a few years ago health authorities began to deal in health problems through the medium of rates, a typhoid death rate of 15 or 20 per 100,000 was considered extremely low for a State or even a city. Then came the introduction of sanitary engineering, and more attention was paid to furnishing a pure water from a bacterial standpoint, the result being that water-borne diseases showed an immediate decrease in nearly every instance.

The low death rate of 4.5 per 100,000 shown by Massachusetts for 1916 is a mark that must be slowly approaching the limit of the typhoid death rate that can be hoped for by the methods that are being used at the present time. More thorough investigations by local boards of health from a carrier standpoint will eliminate many of the sporadic cases that are now appearing throughout the year.

The State, exclusive of Boston, has a rate of 4.7 per 100,000, which is a very low rate, considering the character of the population excluding its largest city. Boston reports a typhoid death rate of 3.4 per 100,000. Excluding the deaths from non-residents, the rate for Boston would be 2.5.

This death rate of 4.5 per 100,000 population is the lowest rate for this disease of any State, as far as official figures on the disease disclose.

THE NORFOLK STATE HOSPITAL.—In submitting their third annual report, the Trustees of the Norfolk State Hospital state with satisfaction that the past year has been one of much improvement in the Hospital equipment and in results attained. The construction of five new brick hospital cottages has given the Hospital for the first time a reasonable opportunity to separate its patients into independent colonies. This colony system provides the best available compromise between the special treatment of the individual and the general collective life which is usual in institutions, and the experience of the Hospital is that the further this colony life is extended and the smaller the groups become, the better have been the results obtained. During the past eight months the out-patient department has opened offices in Fall River, Lawrence, Salem, Brockton, New Bedford, Pittsfield, Greenfield, Northampton and Worcester. As to these stations the Trustees report as follows:

By means of them it has become possible for our medical officers to explain the nature of the work performed by the hospital, to interest physicians in various communities whose attention might not otherwise have been directed to the hospital, to examine prospective patients near their own homes, to maintain associations with former patients after they leave the hospi-

tal, to assist local probation officers in the disposition of the cases under their charge, and to shorten the residence of many patients at the hospital. In no other way have the true service and duty of the hospital been brought so clearly to the attention of the courts, and this association of the hospital and courts will, we trust, be of mutual helpfulness. When the hospital was inaugurated, it was regarded by judges merely as a place of detention for hopeless inebriates. The broader duties of the hospital and of its medical staff in their relation to the treatment of inebriety by the Commonwealth are only now being recognized. We are confident that more and more its physicians and administrative officers will be summoned by courts to consult with them in regard to the disposition of the procession of inebriates who are daily brought before them. Some of the courts have already utilized the hospital in this way, and its officers are ready to respond to any call for further service of this character. We recommend the gradual extension of the outpatient system to the other larger cities of the State.

SOCIAL SERVICE DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL.—The eleventh annual report of the Social Service Department of the Massachusetts General Hospital covers the period from January 1, 1916, to January 1, 1917. The main body of this report is taken up by a series of short papers whose writers were the chief promoters of the activities they describe. These papers, taken as a whole, emphasize two facts: first, that the outside work of the Department as a whole becomes constantly further reaching; next, that its inner structure is being amplified and strengthened. The first paper describes how the volunteers, fifty-three in number, have organized themselves into a special department and entering, as a department, into relation with the social service organization as a whole. Previously each volunteer did her allotted task with but little chance to learn about the doings of her colleagues and still less to grasp the plans and purposes of the larger body whose interests they served. Another paper is an abstract of a noteworthy survey made in the neurological department, dealing with the problem of remunerative employment for the epileptic. The purpose of the survey was to ascertain exactly what the conditions were that made for success or failure in the case of each of the one hundred patients coming to the clinic, and to forecast the measures that must be taken to make the possibility for self-support a better one. Two papers of particular interest to the general subject are also included. The first is by Dr. Cabot, which presents the affirmative arguments for compulsory health insurance, and the other, by Miss Cannon, gives an impressive survey of the one hundred and twenty-six social service departments in the country connected with hospitals,

and calls attention to the variety of needs that led to their establishment. The report closes with a financial statement which shows no deficit for the year but that much increased contributions are needed if the department is to fulfill the purpose of its organization, in the community in which it is placed.

SPRINGFIELD ACADEMY OF MEDICINE.—The May meeting of the Academy was held at 137½ State Street, Springfield, on Tuesday, May 8, 1917, at 8.15 p.m.

Dr. Henry Jackson of Boston spoke on "The Electrocardiograph," illustrated with lantern slides.

This was the last meeting of the season. The next meeting will be held on September 11th.

Bond-holders are reminded that interest can be collected at any bank on and after July 1st.

The library will be open all summer; five new journals have been added to the list.

CARE OF INFANTILE PARALYSIS PATIENTS.—The Instructive District Nursing Association has arranged a series of lessons in the care of infantile paralysis patients to be given its nurses at the Charlestown, East Boston and Roslindale Stations, by nurses of the Children's Hospital who have been trained at the Children's Hospital.

INFANTILE PARALYSIS IN MALDEN.—One case of infantile paralysis has been reported in Malden, Mass. This is the first occurrence since last summer's epidemic.

PRIVATE WARD OF MASSACHUSETTS GENERAL HOSPITAL.—The new ward for paying patients at the Massachusetts General Hospital was opened for occupancy and received its first patients on May 16. This private ward is an extension of the Hospital and under its administration, but is designed to offer the facilities of a well-equipped hospital to those who are in circumstances to pay for their treatment.

"The building is eight stories in height, has a frontage of 160 feet and a depth of 53 feet. It sets back 33 feet from Charles Street, on the western part of the hospital grounds, fronting the parkway and the Charles River Basin. Separate entrances, independent of those of the general hospital, are provided. It has its own main and ambulance entrances.

The length of the building is north and south, so that all the patients' rooms have either morning or afternoon sun. At the northern end, extending to the east, is the service wing, so located as to cast no shadows on patients' rooms. A special architectural feature of the building is the series of superimposed verandas on the south end of the building, which are constructed of ornamental iron with high railings.

The building is of first-class fireproof construction throughout. The exterior, above the granite base course, is built of dark red brick

laid in Flemish bond, with limestone trimmings.

There are 102 rooms for patients, so arranged that they may be used singly or in suites of two, three or four rooms, with baths. The patients' rooms on the west front are provided with fireplaces.

The first floor contains the administrative offices, patients' library and reception rooms. The second to the seventh floors, inclusive, are given up entirely to patients' rooms, with the necessary diet kitchens, utility rooms, nurses' sitting rooms, flower refrigerators, physicians' laboratories, toilets, etc. There are also a few patients' rooms on the first and eighth floors.

Along the north end of the building, on the eighth floor, are three operating rooms and a pathological laboratory with the necessary accessories. On the same floor on the west side, overlooking the Charles River, are two large sun parlors with fireplaces where convalescents may go on days that are too cold or windy for the verandas or roof garden. On the eighth floor are rooms for patients who are to stay in the hospital for a few days only. These are provided in order that the other floors may not be disturbed too often.

The kitchen in the basement has walls of enameled brick, slate floor and sanitary base."

PREVENTION OF MILK-BORNE EPIDEMICS.—In the effort to prevent or reduce the number of milk-borne epidemics in Massachusetts the State Health Department has recently issued to all local boards of health in this Commonwealth the following regulation, making reportable a group of infectious diseases easily transmitted by milk, when occurring in the household of any person engaged in milk production, transportation or distribution.

"It will hereafter be the duty of the officers in charge of any city or state institutions, charitable institution, public or private hospital, dispensary or lying-in hospital, or any local board of health, to give immediate notice to the State Department or the department's district health officer in every case coming to their notice in which typhoid fever, dysentery or diphtheria, scarlet fever or tonsillitis has occurred in the household of any person engaged in the production, transportation or distribution of milk for public sale."

Similar reports must also be made in every case in which these diseases have been due, or presumably due, to the consumption of milk infected with material derived from persons infected with the said disease.

MASSACHUSETTS DENTAL SOCIETY.—The fifty-third annual convention of the Massachusetts Dental Society was held at Springfield, Mass., on May 3, 4 and 5. The following officers were elected for the ensuing year: president, Dr. Frank T. Taylor of Boston; vice-presidents, Dr. G. C. Ainsworth of Boston, Dr. William I. Spears of Fall River; secretary, Dr. J. Arthur

Furnish of Boston; assistant secretary, Dr. Albert W. Day of Worcester; treasurer, Dr. Joseph T. Paul of Boston; editor, Dr. C. Edson Abbott of Franklin. The annual meeting of 1918 will be held in Boston.

SOUTH BOSTON HEALTH UNIT.—It is announced that another health unit, similar to the one which for the past year has been in operation in the West End, is soon to be established by the City Health Department in South Boston.

Eight distinct branches of work, represented by as many organizations, participate in these District Health Units, and South Boston and East Boston will soon have the benefits of the Health Department combined with the various nursing, charitable, dispensary, milk and baby hygiene associations. A physician will be in attendance at the Health Unit all the time, one or more nurses will be in attendance, ready to give any and all information regarding care and nursing of children.

Through the services of a Boston Dispensary district physician, residents of the district who are too poor to employ a physician, may secure treatment without being obliged to go into the city.

From the Consumptives' Hospital department special nurses will be provided and information and assistance will be given by the Milk and Baby Hygiene Association. To the representative of the Associated Charities one may refer any case where financial assistance is needed, and any case concerning people of Jewish extraction will be taken care of by a representative of the Hebrew Federated Charities.

The old building formerly used by Police Division 6, West Broadway, between B and C Streets, is being renovated for occupancy by the Health Unit of South Boston.

NEW ENGLAND NOTES.

CONNECTICUT.—The one hundred and twenty-fifth annual meeting of the Connecticut State Medical Society was held at New Haven on Wednesday and Thursday of last week, May 23 and 24. The following scientific program was presented:

WEDNESDAY, MAY 23, 1917, 2 P.M.

"Some Problems of State Health Organization," Dr. Kate C. Mead, Middletown; Discussion, Prof. C. E. A. Winslow, New Haven (by invitation); "Treatment of Congenital Club Foot," (illustrated by lantern slides), Dr. Ansel G. Cook, Hartford; Discussion, Dr. Joseph F. O'Brien, Hartford; "Early Diagnosis of General Paresis," Dr. C. Floyd Haviland, Middletown; Discussion, Dr. Whitfield N. Thompson, Hartford; "The Differential Diagnosis and Treatment of Some of the Rarer Urological Conditions" (illustrated by lantern slides), Dr. Thomas N. Hepburn, Hartford; Discussion, Dr. A. C. Heublein, Hartford, Dr. E. J. McKnight,

Hartford; "The Treatment of Ectopic Gestation Based on Results Obtained on the Gynecological Service of the Hartford Hospital," Dr. Calvin H. Elliott, Hartford; Discussion, Dr. Phineas H. Ingalls, Hartford, Dr. T. Weston Chester, Hartford.

THURSDAY MORNING, MAY 24, 1917, CLINICAL SESSION.

Laboratory Demonstrations, Clinical Laboratory, Yale Medical School; "The Technic of Isolation of Pneumococci from Sputum in Pneumonia, and the Differentiation into Types," Dr. A. L. O'Shansky, New Haven (by invitation); Demonstration of Quick Method of Determining the Urea of the Blood, Dr. J. M. Slemmons, New Haven; Demonstration of Method of Determining the Alveolar CO₂, Dr. W. H. Morriss, New Haven; Demonstration of Syphilis of the Placenta, Dr. J. M. Slemmons, New Haven; "Cystin Crystals in Urinary Sediment," Dr. C. W. Comfort, New Haven.

Clinics were held in the New Haven Hospital, the Grace Hospital and the Hospital of St. Raphael. On the afternoon of May 24, the following papers were read, and the annual banquet was held at Hotel Taft on the evening of that day.

THURSDAY, MAY 24, 1917, AT 2.30 P.M.

President's Address, Dr. Samuel M. Garlick, Bridgeport; "Skull Fractures, Their Treatment," Dr. William Sharpe, New York City, Adjunct Professor Neurological Surgery, New York Polyclinic Medical School (by invitation), (illustrated by moving pictures); "The Mobilization of the Medical Profession," Dr. Joseph Marshall Flint, New Haven; "The Distribution of Fat in the Appendix and Its Relation to Inflammatory Processes," Dr. George M. Smith, Waterbury; Discussion, Dr. J. M. Flint, New Haven, Dr. A. A. Crane, Waterbury.

The following are the officers of the Society: president, Samuel M. Garlick; vice-presidents, George M. Burroughs, John C. Kendall; secretary, Marvin McR. Scarbrough; treasurer, Phineas H. Ingalls.

Massachusetts Medical Society.

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.

BRISTOL SOUTH.—Dr. Charles A. Bonney, Jr., of New Bedford, has been appointed assistant surgeon at St. Luke's Hospital in that city.

EDWIN D. GARDNER, M.D.,
District Correspondent.

HAMPSHIRE.—Dr. Edward W. Brown of Northampton has been recently appointed

medical examiner for Hampshire County, to succeed the late Dr. Christopher Seymour. Dr. Brown is a graduate of Columbia College, New York City, and began the practice of surgery in Northampton in 1900.

Dr. Joseph D. Collins and Miss Margaret D. Lee were quietly married in Old Deerfield on May 21, by Rev. Patrick H. Gallen. Miss Lee is active in Red Cross work in Northampton, and is very popular socially. Dr. Collins is a graduate of the Harvard Medical School and has been practising laryngology in Northampton for the past few years.

Dr. Edgar H. Hughes of Northampton and Miss Florence A. Martindale, a senior at Smith College, were married May 21 in Holyoke by Rev. P. T. O'Connor. Miss Martindale is a daughter of Dr. J. Watson Martindale of Camden, N. J. Dr. Hughes has recently received a commission as lieutenant in the army medical corps, and expects to leave soon for active duty.

ELMER E. THOMAS, M.D.,
District Correspondent.

Obituary.

CHARLES EDWARD BUCK, M.D.

DR. CHARLES EDWARD BUCK, Boston—Tufts College Medical School, 1903; aged 58; a Fellow of the American Medical Association; member of the Massachusetts Medical Society—died at his home May 11.

Dr. Buck was born in Bucksport, Maine, in 1859. After graduating from the Philadelphia College of Pharmacy, he entered medical college, making a special study of diseases of children, to which subject he eventually devoted his entire time. He was one of the promoters in the founding of the Boston Floating Hospital for Infants and Children. In 1914 he was elected treasurer of the Middlesex College of Medicine and Surgery, at which institution he had spent a large part of his time with gratifying success. His love for children engendered a large clinic and through that fact he was enabled to secure a bequest of three hundred and fifty thousand dollars for the clinical departments of the college.

Miscellany.

THE MEDICAL SERVICE OF THE GERMAN ARMY.

THE *Army and Navy Register*, in its issue of May 12, 1917, has this to say as to a recent report on the efficiency of the German medical service:

"Of interest and significance are the contents of a special report made some months ago, and now just available in this country, by Colonel Hans Daae, head of the Norwegian Army Medical Service, who was given certain facilities during a tour of inspection in Germany last summer to study German military medical experiences for the benefit of his own service. That officer records his impressions of the 'smoothness with which everything worked' in the various medical depots in the way of accumulation and distribution of supplies. There was the thoroughness in the way of storage classification and index, and the completeness of the record was indicated by 'an exhibition of models of everything in use at the outbreak of the war and altered or invented during the war.' It is interesting to learn, for example, that one of the most radical changes effected during the war had to do with instruments and their cases. These were, in fact, discarded, the metal of which they were made being urgently needed for other purposes. To prevent rust, the cloth in which the instruments were kept, in lieu of the metal cases, was impregnated with paraffin. A sketch of each instrument was stamped on the cloth to show its proper place.

But it is in another particular that the comments of the Norwegian expert are of special value. He says that it was soon found that the organization of the medical service in the field must be thoroughly revised. Early in the war the infliction of a single casualty was the signal for a medical officer to be sent to the spot at once; in consequence, the medical service suffered great losses in the first months of the war. A similar mistake was made in establishing dressing stations before it was even comparatively safe to do so. It was not until casualties in the medical service had assumed alarming proportions that orders were issued that the military surgeons should not be sent here and there at the command of the non-medical staff, but should themselves determine when and where their services should be given.

Colonel Daae was duly impressed by the improvements wrought by this change of system. The medical officers, he says, became far more independent and were more respected than before, and that the heads of the medical branch were regarded by their associates of the line as of importance in the maintenance of the fighting power of the personnel. Perhaps the transformation was more conspicuous in Germany than it would be in another country, because before the war the medical officer was evidently 'regarded as a necessary but inferior official, by no means on the same footing as his fellow officers in the other services.'"

MARRIAGES

Miss Margaret M. Alexander, a graduate nurse of the Massachusetts General Hospital, and Dr. Ralph W. Dennen, junior surgeon at the Waltham Hospital, were married on, May 16, at the bride's home in East Boston. Dr. Dennen is a member of the Medical Reserve Corps.

RECENT DEATHS.

WILLIAM G. BRANSCOMB, M. D., of New Bedford, died at his home in that city on April 10. He was born at Vineyard Haven and was a graduate of the Medical College of the University of New York.

EDWARD W. AVERY, M.D., of Brooklyn, N. Y., died in that city on February 13. Dr. Avery was born in 1841, the son of Prof. Charles Avery of Hamilton College. After graduating from Hamilton College he attended the New York Homeopathic Medical College and the College of Physicians and Surgeons, graduating from the latter institution in 1866. During the Civil War he became an assistant surgeon in the United States Navy and later a surgeon in the Army. He enlisted as a surgeon in the German army during the Franco-Prussian War, and was with the troops when they entered Paris. Dr. Avery was the founder of the old Central Homeopathic Dispensary. He was a member of the Kings County Medical Society and of the New York State Homeopathic Society, and senior member of the Kings County Homeopathic Society.

ARTHUR VINAL LYON, M. D., a Fellow of the Massachusetts Medical Society, died at his home in Brockton, February 21, of cerebral hemorrhage. He was a graduate of Amherst College in 1884 and of Harvard Medical School in 1887 and had been a visiting physician at the Brockton City Hospital. He was 54 years old.

HALL STAPLES, M.D., died at his home in West Acton, Mass., March 7, aged 46 years. He was born in Windham, Me., Dec. 3, 1870, was a graduate of Dartmouth Medical School in 1892, and practised at Grafton, Vt., until 1912, when he settled at West Acton and joined the Massachusetts Medical Society.

GUSTAV JAEGER, M.D., whose name is familiar as an advocate of wool clothing for hygienic reasons, died recently at Stuttgart, Germany. Dr. Jaeger was born in Württemberg, Germany, in 1833, and was intended by his parents to become an evangelical minister like his father. He preferred the study of medicine and natural science at Tübingen. He received his doctor's degree here, soon turning his attention from zoology, to physiology, biology and hygiene. When, in 1859, Darwin published his "Origin of Species," Dr. Jaeger was one of the first of his disciples and he did much, through lectures and writings, to popularize the Darwinian theory.

WILLIAM F. SMITH, M.D., of Malden, Mass., died at the home of his father on May 16. Dr. Smith was graduated from Tufts Medical School in 1914, and became house physician at the Cambridge Hospital. While there he contracted pneumonia which developed into tuberculosis. He was president of his class at Tufts and was a member of the Massachusetts Medical Society and the Tufts Medical Fraternity.

J. O. HESSE, M.D., for many years a leading authority on chemistry of quinine and other cinchona alkaloids, died, on February 10, at Feuerbach, near Stuttgart, Germany, at the age of 82.

SIR WILLIAM TAYLOR, M.D., a surgeon-general in the British Army Medical Service, and late director general of the service in Great Britain, died, on April 10, at Windsor, England.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

June 7, 1917

OBITUARY

CHARLES FRANCIS WITHINGTON. By Walter F. Bowers, M.D., Boston.....	793
--	-----

ORIGINAL ARTICLES

THREE TYPES OF TUBERCULOSIS. By Mary E. Lapham, M.D., Highlands, N. C.....	795
DEFECTIVES IN OUR PRISONS. By A. Warren Stearns, M.D., Boston.....	801
TREATMENT OF SOME OF THE POSTURAL DEFECTS AND HABIT MOTIONS COMMON AMONG THE BLIND. By Miss Lenna D. Swerton, Watertown, Mass.....	803

CLINICAL DEPARTMENT

A CASE OF IRITIS AND OPTIC NEURITIS FOLLOWING TONSILLITIS. By Irving Sobotky, M.D., Boston.....	806
A WONDERFUL PROVISION OF NATURE FOR DRAINAGE OF A PELVIC ABSCESS. EVOLUTION OF AN ADVENTITIOUS DRAINAGE TUBE. By Horace Packard, M.D., Boston.....	807
A CASE OF TUBAL PREGNANCY. By Edward H. Mackay, M.D., Clinton, Mass.....	808
A CASE OF AMEBIC ABSCESS OF THE LIVER IN A GUARDSMAN RECENTLY RETURNED FROM THE MEXICAN BORDER. By Lester Adams, M.D., Bangor, Me.....	808

SOCIETY REPORT

NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS. MEETING DECEMBER 13, 1916.....	810
---	-----

BOOK REVIEW

A Text-Book of Human Physiology. By Albert P. Brubaker, A.M., M.D.....	813
--	-----

EDITORIALS

FRANCIS HENRY BROWN.....	814
TUBERCULOSIS AND THE WAR.....	815
THE PASSING OF A FAMOUS PHYSICIAN.....	816
THE MASSACHUSETTS MEDICAL SOCIETY.....	816
MEDICAL NOTES.....	817

OBITUARIES

CHRISTOPHER SEYMOUR, M.D.....	821
HENRY PINCKNEY FROST, M.D.....	821

THE MASSACHUSETTS MEDICAL SOCIETY.

PROGRAM OF THE 136TH ANNIVERSARY.....	822
---------------------------------------	-----

CORRESPONDENCE

HAVERHILL PHYSICIANS' WAR SERVICE ASSOCIATION. Francis W. Anthony, M.D.....	824
---	-----

MISCELLANY

NOTICES, APPOINTMENTS, RECENT DEATHS, ETC.....	824
--	-----

Obituary.

CHARLES FRANCIS WITHINGTON.

BY WALTER F. BOWERS, M.D., BOSTON.

DR. CHARLES FRANCIS WITHINGTON died in Boston, January 7, 1917. He was born in Brookline, August 21, 1852, the son of Otis and Lucy (Jenckes) Withington.

His ancestry was identified with the development of New England life, being to a considerable extent of the Puritan strain, with several marriages into the Pilgrim stock. At least four came on the *Mayflower* on her first voyage, one of whom, John Howland, is spoken of as the "lusty young man" who was rescued from drowning by his agility in grasping a rope when he fell overboard.

Dr. Withington was directly descended from Henry Withington, who was born in England and who came to this country on *The James*, in 1636, with his wife and four children. Henry Withington was the Ruling Elder of the First Church of Dorchester for twenty-nine years. Richard, son of Henry, married a niece of Eliot, "The Apostle to the Indians."

John, a son of Richard, commander of a company in Sir William Phipps' Expedition against Quebec in 1690, was the grandfather of Samuel, a lieutenant in the Revolutionary War. Enos, the son of Samuel, built a house in Brookline, where Otis and his son, Dr. Charles F. Withington, were born.

From this meagre reference to his genealogy, one may appreciate the combination of qualities developed through generations of men and women who founded and developed Massachusetts ideals and achievements.

After a boyhood spent in Brookline, Dr. Withington entered Harvard College in 1870, graduating four years later with the degree A.B. *cum laude*, ranking fourth in his class. His work secured a detour and second year honors in the classics, and he read a commencement part on graduating. While in college he was a member of the Pi Eta and Phi Beta Kappa societies. Whenever it was possible, the joint festivities of the societies and the commencement exercises always drew him to Cambridge.

After leaving college he taught for one year in the Brookline High School, and the two succeeding years in the Roxbury Latin School, becoming a trustee of the latter a few years later, serving as secretary of this board for twenty-five years.

In 1877, he entered the Harvard Medical School, and became a member of the Boylston Medical Society, serving as its secretary. He read a prize essay before this Society, under the title of "The Pupil as a Therapeutic Guide." He received the degree of M.D. in 1891, having served as medical interne in the Boston City Hospital, and the following year was assistant to the superintendent. He began independent practice in Roxbury immediately after leaving the Hospital, continuing there until 1902, when he moved to 35 Bay State Road, where he worked until incapacitated.

Although deeply interested in, and loyal to

his patients, Dr. Withington enjoyed the study of the deeper problems of his profession, and took keen interest in the critical review of medical literature.

Immediately after entering upon practice, he joined the editorial staff of the *BOSTON MEDICAL AND SURGICAL JOURNAL*. His reviews, editorials and other contributions were not only logical and scientific, but permeated with an in-

ily, the winter of 1892-3 was spent largely in Berlin, where he matriculated in the University. The following year he was made instructor in clinical medicine at the Harvard Medical School, retaining this office until he resigned in 1905. In 1912 he was appointed lecturer in the Graduate School of Medicine.

Early in his practice, he served as physician to the Out-Patient Department at the City Hos-



Charles F. Withington

dividuality which lent an added charm. His more notable contributions were entitled, "Cong sanguineous Marriages" (Transactions Mass. Medical Society, 1885), "The Relations of Hospitals to Medical Education" (Boylston Prize Essay), "An Inquiry into the Transmission of Contagious Diseases through the Medium of Rags" (Report Mass. Board of Health, 1887) and several articles in Wood's Handbook of Medical Sciences (1886-8).

In 1891, desiring to study bacteriology, he went abroad, and later being joined by his fam-

ily, securing the appointment on the Visiting Staff in 1892, which he held until 1915, when he was appointed Consulting Physician.

An interesting fact may be noted in calling attention to the first use of diphtheria antitoxin in the Boston City Hospital, which was in his service, on December 12, 1894. (See *BOSTON MEDICAL AND SURGICAL JOURNAL*, cxxxii, No. 11, pp. 249-260).

In 1898 he was elected a member of the Association of American Physicians. Several of

his contributions appear in the transactions of this Society.

These honors and activities, as here outlined, would seem to have made up a life of unusual usefulness, but through all these years there was continuous devotion to an organization in which Dr. Withington found opportunity for service which led eventually to his being elected as President of The Massachusetts Medical Society. Beginning as a Censor of the Norfolk District Society in 1892 he, together with his associates, formulated a plan for the uniform examination of candidates for Fellowship, becoming Supervisor under this scheme, which was adopted in 1894. Later, he was chosen Councillor from the Norfolk District in 1896-97-98, and Vice-President of this district in 1900-01. He was elected President of this same district in 1902. This honor he could not accept because it came just as he was about to remove his home to Boston.

From 1908 to 1914, Dr. Withington served the State Society as member of the Committee on State and National Legislation, being the secretary and executive officer for several years. His associates will always remember the valuable services rendered the society and the state, for he carefully and diligently studied all matters of a medical and public health nature. He was quick to detect merit or error in bills presented, and sacrificed valuable time in attending hearings and disseminating information. Although frequently obliged to antagonize the efforts of those opposed to public health and medical interests, he had the rare ability of presenting facts in a logical manner, free from personal bias. He always secured a respectful hearing. He represented the State Society in the National Legislative Council of the American Medical Association in Chicago in 1912-13-14, where he reported the conditions in Massachusetts.

All of these activities led to the recognition of the valuable services rendered the profession and the state, and his election to the presidency of the Massachusetts Medical Society in 1914 was most fitting. Several unfinished plans of the preceding year fell to him to put into effect. His management of the affiliation of the BOSTON MEDICAL AND SURGICAL JOURNAL with the Society, and other questions concerning which there were pronounced differences of opinion, demonstrated executive ability and diplomacy which secured effective and harmonious action. Although conscious of a developing infirmity, he threw himself into the arduous and perplexing problems of this position and carried the Society through two years of most constructive work. To a few intimate friends, it was clearly apparent that he was working beyond his strength, but he never faltered, and carried his administration to a successful end.

Dr. Withington was not only a leader in medicine but he also upheld the ideals and traditions

of New England, for he was ready to study the sociologic questions of the day, and made his life exemplify the highest type of human culture.

On September 20, 1893, he married Georgianna Bowen. Of this union there were born four sons and a daughter. One son died in infancy.

It is interesting to note that the father's life has inspired one son, Paul Richmond, with the desire to practise medicine, and also to state that this son occupied the position of secretary of the Boylston Medical Society thirty-five years after his father was elected to the same position.

To those who knew Dr. Withington well, this brief recital of his life and work seems barren and incomplete, for it does not adequately portray the high-minded, finished gentleman, the warm-hearted friend, the devoted public-spirited servant, and the courageous spirit of a man who found in life the opportunity for service which was grandly met.

Original Articles.

THREE TYPES OF TUBERCULOSIS.

By MARY E. LAPHAM, M.D., HIGHLANDS, N.C.,
Highlands Camp Sanatorium.

TUBERCULOUS processes within the thorax may develop predominantly upon the functional surfaces of the air passages or follow along the blood and lymph channels through the interstitial tissues of the lungs, or remain chiefly confined to the bronchial glands.

Those developing chiefly upon the functional surfaces of the air passages tend almost of necessity to manifest themselves by disturbances of function such as increased secretion, and by the physical signs of bronchitis and bronchobulbar pneumonias, tuberculosis of the functional surfaces, or parenchymatous tuberculosis, causes bronchitis and broncho-bulbar pneumonias with the fundamental characteristic of inflammatory reaction to irritation: the hyperemia leads to congestion, increased secretory activity, exudation, desquamation, caseation, cough and expectoration. The absorption of toxins is almost unavoidable, and therefore increased temperature and frequency of pulse rate are characteristic consequences. The physical signs are those of wet, infiltrated tissues with exaggeration and roughening of breath sounds, wet râles, and dullness. Because the physical signs and the symptoms of parenchymatous tuberculosis are in accord with each other, the diagnosis is easy. The prognosis often remains uncertain until we determine the effect of rest upon the hyperemic pulmonary vessels. If relief from strain does not stop the leakage from over-distended vessels and the area of wet râles,

and dulness increases in extent, we are afraid that we cannot stop this extension without some artificial help; and if three or four months of careful nursing in bed in the open air does not succeed in arresting it, it may seem necessary to compress the lung in order to protect the patient from pneumonic extensions or "galloping consumption."

On the other hand, just taking the strain from the pulmonary circulation by thorough rest sometimes accomplishes spectacular results just by stopping the leakage and drying out the tissues. In many cases all that is necessary is to restore the balance of circulation in the pulmonary vessels by taking away the extra strain they could not stand and through the avoidance of all physical efforts so to lessen the amount of blood forced through them that stasis, congestion and leakage are prevented and the lung dries out in the most gratifying manner. In these cases it is possible that secondary edematous infiltrations are largely responsible for the condition of the lungs and that we do not always make a distinction between the secondary edematous areas and primary tuberculous consolidations because the physical signs are very much the same. In a case with dulness, wet râles and exaggerated, roughened breath sounds over the whole of one lung and down to the second rib in the other, the extent of primary tuberculous consolidations, as compared with their secondary edematous consequences, will make a good deal of difference with our prognosis. If the bad lung is full of "disintegrating foci" and there are inflammatory processes down to the second rib in the other lung the prognosis for this third-stage case is bad and it is more than doubtful if the most complete rest will dry up these areas. But, if a large part of the dulness and wet areas is due to secondary edemas, and rest stops the leakage and dries out the tissues, then the prognosis is quite another affair. As week after week the wet râles and the dulness disappear and the line of dryness climbs higher and higher up, we find that just so much of the lung must have been edematous because nothing but edemas could disappear so fast. Finally, when the dulness and wet râles no longer disappear over new areas and we find that they remain fixed, then we infer that the secondary edemas have been dried up and the remaining portion of the lung represents the primary tuberculous consolidations. If we wait until this knowledge is gained, shall we classify the case as one of complete involvement of one lung and apex of the other or as one of primary tuberculous consolidation throughout the extent remaining unaffected by rest, and of secondary edematous infiltrations through those parts so rapidly dried out? A good many remarkable recoveries of so-called third-stage cases might be explained by this classification and it may be more accurate in the future to base our classification and statistics upon the condition of the lungs after the effects of rest have been obtained instead of before.

The recognition of edematous areas might also influence the prognosis and treatment of certain cases. A case was sent to us in a seemingly desperate condition; temperature 103, pulse 130, very weak and irregular, respirations 30, and persistent profuse expectoration of frothy sputum; a good deal of sweating, prostration and extreme dyspnea, wet râles, dulness and exaggerated roughened breath sounds over all the left lung and down to the second rib in the right. The referring physician regarded the case as advanced, hopeless, and belonging to the third stage. With relief from strain, the pulmonary circulation dried out, the edematous, frothy expectoration ceased and week by week the areas of dulness and wet râles disappeared. In three months the maximum temperature was 99.3, the pulse 96, respirations 20, and dyspnea and sweating gone; appetite, strength and weight rapidly improving. The upper lobe of the left lung marked the limit of improvement. When its boundaries were reached the spectacular weekly progress ceased and thenceforth there were few changes in the lungs, but the clinical gain continued to be most gratifying. In all probability, this was a case of primary tuberculous consolidation of the upper lobe of the left lung, with secondary edematous infiltration of the lower lobe of the left, and apex of the right lung. The high temperature, increased frequency of pulse rate and respirations, sweating, dyspnea and frothy, persistent expectoration may all have been caused by the absorption of toxins from wet, boggy tissues, and as these edemas were absorbed away the toxemia lessened. After six months of drying out, the recovery was so complete that the case might easily have been regarded as "arrested," since there were no clinical signs of activity. This would be a great mistake, for the stoppage of leakage is a very different matter from the restoration of structural integrity to which it is a necessary preliminary. The relief from over-distention of damaged pulmonary vessels is the first requisite, the absorption of edemas the second; but when this has been accomplished nothing permanent has been gained, nothing which would not be lost almost at once by over-strain and the return of distention. So far the ground has been drained and cleared and gotten ready, now we are just beginning to get in the proper condition for recovery. Now we have really to recover by restoring the structural integrity of the tissues, which means a year or more of careful living and prevention of strain. The prognosis in such a case is excellent, provided you can convince the patient of the necessity for time to repair firmly the destruction of years of insidious development of tuberculous processes, and provided you can make him understand that absence of symptoms has nothing to do with absence of danger. Freed from temperature, cough and expectoration, with appetite, weight and strength restored, he naturally compares such a condition with recovery from typhoid and other acute diseases

and argues that if he feels well and there are no symptoms of illness then he must be well. He is prone to venture upon this and that forbidden indulgence and when no temperature or other symptoms supervene he says triumphantly that this has not hurt him. This may be true, but it is also true that during all the years of unsuspected insidious extensions of tuberculous processes through the lungs, there were no symptoms to warn, and that just as he blithely trod the downward path to gloom in those care-free days, so now he may trifle with his future and be none the wiser until it is too late and his opportunity is gone. The prognosis depends more upon the intelligence, judgment and self-control of the patient than upon the extent of tuberculous processes in the lungs. There are many reasons for these edematous infiltrations. Turban has emphasized the tendency of tuberculous toxins to increase the permeability and to overdistend the pulmonary vessels, especially in the regions nearest the production of toxins. This is illustrated in the local reaction to subcutaneous injections of tuberculin as well as by the focal reaction in the lungs. The insufficiency of the cardiac muscles and lacking *vis a tergo* may have something to do with stasis and congestion, just as in other pulmonary edemas, and the blockage caused by tuberculous consolidations may be another factor. As the blood comes up to these obstructed areas through which it cannot pass, it is turned back and thus a double strain is caused which is not relieved by abundant anastomoses as in other organs. Whatever the cause, the primary factor in recovery is relief from physical effort and strain and the restoration of the sufficiency of the circulation through the damaged areas in the lungs for a sufficient length of time to secure their permanent integrity.

The fundamental characteristics of parenchymatous tuberculosis are hyperemia, leakage, and the inflammatory response to an irritant shown by bronchitis and pneumonias, with their physical signs of exaggerated, roughened breath sounds, wet râles and dullness, which conditions are easily diagnosed. Of quite a different nature are those tuberculous processes entering the lung from the bronchial glands and following the blood vessels and lymphatics along the peribronchial sheaths to their ultimate distribution to the terminal lobuli and alveolar circulation. Beginning at the hilum and creeping through the lungs, these interstitial extensions do not provoke inflammatory reactions. Insidiously creeping from point to point they are like the sclerosing processes of connective tissue infiltrations of other organs and differ very little from the interstitial sclerosis of the kidneys, liver, spleen and pancreas and end similarly in fibroid suppression of functional activities. Just as the interstitial sclerosis of the granular, contracted kidney or of the cirrhotic liver makes no sign until functional insufficiency develops, so the fibrosis or interstitial sclerosis of the lung may

develop for years without causing any impairment of health so long as the processes remain purely interstitial and there is functional sufficiency.

In this interstitial sclerosis of the lung anemia instead of hyperemia prevails. Instead of being solidly enlarged like the parenchymatous inflammations of liver and kidneys and lungs and packed with caseous and other decomposing materials, the sclerosed lung is dry, shrunken and contracted like the cirrhotic liver and kidneys. The functional portions are not stimulated but suppressed. There is no increased secretion to remove by coughing, no decomposing products to cause toxemia. It is a withering, drying shrinking disappearance of the breathing spaces situated at the end of the branches of the bronchial tree caused by the overgrowth of the scale-like processes creeping out along the bronchi. The larger bronchial branches have rigid walls which resist the pressure of the infiltrations, but as soon as the smaller branches are reached, whose walls are insufficiently protected from pressure, they are more or less compressed and stenosed. At first the stenosis is partial and then the air is apt to enter the alveoli more easily than it can escape, because the stenosis is relieved when the chest wall is pulled out, and it returns as the chest wall falls back, making it difficult for the air to escape, and establishing a tendency for it to accumulate in the terminal lobuli. As the stenosis becomes complete the air cannot pass on to the infundibuli, the lobuli collapse and areas of atelectasis develop. In chronic fibroid phthisis the breathing spaces are gradually obliterated in this way until the leaves are all stripped off and only the branches remain. The loss of elasticity, the inability to stretch, the inability to inflate the infundibuli, cause the flattening and lagging and retraction of sclerosis of the lung.

What physical signs first suggest this gradual extinction of breathing spaces? Not dullness, because the air content of the larger bronchi is well preserved, and in incomplete stenosis of the bronchi it is even increased. Not wet râles, because an anemic dryness prevails. Not harsh, exaggerated breath sounds, because the functional surfaces are smooth and there is nothing to cause roughness and exaggeration. On the contrary, the breath sounds are lessened in vigor, partly on account of the stenosis and partly on account of the emphysema, and thus suppression of breath sounds and prolongation of expiration are the first indications that the air does not enter or leave the lung properly because the bronchi are stenosed. When some of the smaller bronchi are obstructed more than others their terminal lobuli may not all fill with equal rapidity. As one infundibulum after another expands, the breath sounds are uneven and interrupted or cog-wheel breathing develops. As one lobule after another collapses, the atelectatic areas furnish enough consolidation to cause increased tactile fremitus.

The diagnosis of interstitial sclerosis of the lungs is not made like the diagnosis of parenchymatous sclerosis from dullness, because the air content of the larger bronchi prevails over the atelectasis of the collapsed areas: nor by wet râles, for there are no edemas and the tissues are dry; nor by roughened breath sounds, because the air passes over unaltered functional surfaces; but by the suppression and irregularity of the breath sounds caused by the inability of the air properly to enter and properly to expand the alveoli and properly escape. Therefore, suppressed, uneven inspiration and prolonged expiration are the characteristics of interstitial sclerosis until secondary complications develop, when the parenchymatous signs of bronchopulmonary pneumonias appear.

The prognosis of fibroid phthisis is good, provided the extensions of the tuberculous processes can be stopped. As a rule, during years of development there is little absorption of toxins from the dry tissues and consequently very little toxemia. Absence of symptoms and absence of physical signs which are recognized as indicating tuberculous changes in the lungs are the essential characteristics of these years of gradual extension of interstitial sclerosis of the lungs. Because of this absence of symptoms, we are often at a loss to know how to interpret x-ray and physical findings when we make the diagnosis of peribronchial infiltration of the lungs, because without symptoms we have no proof that the processes undoubtedly present are at all active or ever will be. Without symptoms we cannot say that tuberculous processes in the lungs are clinically active and so every day it is becoming a much simpler and easier matter to detect them than to establish their significance after we find them.

We are constantly proving that the world is full of working people with the physical and x-ray proofs of tuberculous processes in their lungs and little or no impairment of health. While in interstitial sclerosis of the lungs the prognosis is difficult, it may be well to remember that all advanced and hopeless cases were once in the stage of clinical inactivity with no symptoms to inform us of their effects upon the health, so that the question, "Will this case progress further?" cannot be answered offhand with accuracy. Slight rises of temperature and neurasthenic and other abnormalities may not seem to warrant the price of a tuberculous régime, but we may some day believe that one of the first and most constant effects of tuberculous toxemia is depression of the endocrine system, which may be regarded as a specific symptom as much in need of correction as any other specific manifestation of tuberculous processes. So long as adrenal and other sympathetic symptoms persist, we cannot say that tuberculous processes are "clinically inactive" but, on the contrary, we will infer from "an unstable heat center" and "thyroid perversions" and "neurasthenia" that there must be some underlying cause and

seek it in the production of tuberculous toxins. Endocrinal insufficiency may come to be as specific a manifestation of tuberculosis of an interstitial nature as cough, loss of weight, temperature, sweating, etc., are manifestations of tuberculosis of a parenchymatous nature.

While fibroid phthisis may persist for years and the patient finally die of something else, there is always the possibility of necrosis, of erosion into the air passages, with consequent bronchitis and broncho-lobular pneumonias, when a mixed type develops, as caseo-fibroid or fibro-caseous pneumonias, and the difficulty of recovery increases. There is also the danger that blood vessels may be eroded, with rapid dissemination of the tuberculous virus and generalized or acute miliary tuberculosis or the typho-bacillæmia of Landouzy, or rapid extensions of pneumonic processes throughout the lungs, as galloping consumption.

Beginning in some cases almost as soon as life itself, tuberculous processes in the bronchial glands may persist indefinitely without causing the slightest impairment of health or any symptoms of any kind, or they may declare themselves suddenly with startling and fatal brutality, or induce functional abnormalities usually regarded as primarily originating in the system manifesting them, or declare themselves by specific symptoms.

Death is usually caused by pressure upon or perforation of important structures, which, as a rule, occurs in childhood or rather early in adult life. Cases have been reported of steady development throughout life with no recognizable symptoms, and death in the last decades from occlusion of the superior vena cava or pressure upon the trachea and bronchi. It is possible that there are cases of "spasmodic asthma," intractable to operations and vaccines, which are caused by partial stenosis of the trachea and bronchi from the pressure of enlarged tuberculous bronchial glands. In children sudden death in a few hours from suffocation may be caused by perforation into the trachea or main bronchi and, as a rule, the erosion is not preceded by symptoms. The children are usually well and the condition is entirely unsuspected.

Tuberculous processes in the bronchial glands do not produce symptoms unless adjacent structures are sufficiently affected by the pressure or there is a sufficient absorption of toxins. Pressure upon the blood vessels and nerves, the trachea, bronchi and esophagus, is betrayed by characteristic symptoms. In the case of the superior vena cava there is interference with the return of the blood from the head to the heart and with the pulmonary artery the blood does not properly circulate through the smaller pulmonary branches of the pulmonary artery. Just behind the sterno-clavicular notch is a group of bronchial glands called the substernal glands, which are very commonly enlarged. Usually there is no cough, but the pressure upon the superior vena cava and the innominate and the

interference with the return flow of the blood is shown by the thick, purplish blotchy complexion, cyanotic edemas of the palpebral sacs and the lips, swelling along the side of the nose, dilatation of the nasal and facial veins, pulsation of the veins in the neck, unequal radial pulses, dilated networks of veins across the chest and abdomen, and tendency to exaggeration of facial cyanosis and edemas in consequence of exercise and menstruation or even indigestion. A young woman came to us with a swelling as large as a walnut, just over the inner third of the clavicle. The swelling was soft, doughy, and suggested an aneurysm. It was painful, throbbed a good deal and there was considerable dyspnea. She had been feeling "run down" and so walked and climbed much more than she was used to, hoping to get strong. There were no abnormal signs in the lungs, d'Espine was positive to fifth dorsal, and the x-ray showed enlarged bronchial glands. As her general health was good and there were no signs of tuberculosis, she was not inclined to give up teaching in order to reduce the hyperemia of the sternal glands, but after a few months the toxic manifestations were sufficiently severe to enforce a tuberculous régime.

Another case of enlarged sub-sternal glands began with slight hemorrhages; at first, just a mouthful, but gradually increasing in severity for months in spite of faithful treatment by a specialist who hoped the hemorrhages might be coming from the throat, as there was nothing to account for them in the lungs. There was no cough and no expectoration, and nothing but a sense of fullness and discomfort around and behind the manubrium. These "occult hemorrhages" were distinctly associated with menstruation, at which time the sensations of fullness and discomfort were markedly aggravated probably by the increased hyperemia of the sub-sternal glands and consequent increased pressure and stasis in the superior vena cava. Increased hyperemia of tuberculous bronchial glands and consequent exaggeration of their symptoms are characteristic features of menstruation.

Pressure upon the pulmonary artery causes many of the typical consequences of pulmonary stenosis from other causes: dilatation of the right heart, clubbed fingers, bloody sputum, bronchiectases etc. The pulmonary branches in the lungs are apt to be insufficiently supplied with blood so that there is a tendency to interstitial connective tissue infiltrations and anemic sclerosis of the lungs. Pressure upon the trachea and bronchi may cause coughing varying in intensity from a slight hacking or hemming or "clearing of the throat" to attacks of paroxysmal coughing with strident expiratory dyspnea, often associated with vomiting. Complete stenosis of trachea and bronchi causes death; incomplete stenosis is associated with chronic bronchitis, asthma, and emphysema. Irritation of the phrenic causes many of the symptoms of sub-diaphragmatic pleurisy. There is pain in the region of its cervical origin and the branches

communicating with it; pain in the neck, shoulder, along the trapezius, down the arm, in the spine etc. Pain and soreness are also felt along the main line of descent and especially along the insertion of the diaphragm. It is possible that many pains supposed to be caused by pleurisy are really a neuritis of the phrenic. The relief afforded by adrenalin suggests this and also may explain the relief in spasmodic asthma caused by hyperemia of tuberculous bronchial glands. Adrenalin seems to have a decided effect upon this hyperemia in many cases, especially during menstruation.

Much of the abdominal distress common to diaphragmatic pleurisy is equally common to tuberculosis of the bronchial glands, and possibly for the same reason, irritation of the phrenic nerve. The pains in the epigastrium, right hypochondrium and right iliac fossa are as typical for one condition as the other, and the removal of a perfectly normal appendix has been performed for the relief of pain in both conditions.

Pressure upon the sympathetic causes bulging and protrusion of the eyeballs, even exophthalmos, unequal pupils, unequal flushing of the face. It has been said that irritation of the sympathetic caused over-stimulation of the gastric glands and all the distress of hyperchlorhydria. This assumption has seemed to be verified by the reduction of the acidity when bromides are given, but it is possible that the lessening of the gastric irritability is as much due to lessening the irritability of the vagus as the sympathetic. We have proof positive that vagus irritability can cause the hyperchlorhydria and the typical clinical picture of gastric ulcer, because when enlarged bronchial glands press upon and erode the esophagus, fibers of the vagus are involved and in many of the cases reported the first and only symptoms for some time were those of acidity and gastric ulcer, which were followed later on by voice changes and pain in the larynx amounting even to laryngospasm. It is possible that irritation of the vagus is also responsible for the frequent association of chorea and spasmodophilia in the histories of tuberculosis of the lungs and that this association has not been suspected because there were no evidences of structural changes in the lungs afforded by physical signs. It may be that the exclusion of tuberculous processes in the bronchial glands will be as important as the exclusion of those in the lungs.

There are two extreme gastro-intestinal conditions typically associated with tuberculosis of the bronchial glands, but we cannot say whether the one or the other is always due to pressure upon either the sympathetic or vagus or whether the tuberculous toxemia directly affects the gastro-intestinal glands or indirectly affects them through the vagus and sympathetic and vaso-motor insufficiency. The excess of acid sometimes equals an acidosis and the anacidity may be equally extreme. The excessive acidity, hunger, inability to absorb food, wasting, etc.,

are comparable to diabetes: the anorexia, acidity, obstinate constipation are comparable to all degrees of malnutrition, marasmus, and atrophy. It has been suggested that these extremes are primarily due to vaso-motor insufficiency with sluggish circulation, stasis and hyperemia of the gastro-intestinal glands causing hyperacidity and increased function at first and loss of secretory function later on.

Pressure upon the vagus causes transient alterations in the quality and quantity of the voice dependent upon the degree of hyperemia in the bronchial glands and its duration. Thus, in consequence of excessive physical or other strain, and quite independent of excessive or wrong use of the voice, and during menstruation, the voice may change its character or even be lost. In many cases hoarseness and weakness of the voice come on towards night when there is increased hyperemia of the bronchial glands from over-physical fatigue. The sensation of something pressing in the throat, as if there were a foreign body there, has demanded an operation for its relief, and nothing but enlarged glands pressing upon the esophagus and causing difficulty in swallowing could be found.

Tuberculous toxemia from bronchial glands is probably far more common than any one has any idea of. In cases where there is a slow, persistent absorption of toxins the effects may be compared with the constant slow absorption of sewer gas. It is easy to understand how this fundamental toxemia may not have any specific consequences, so that we can say that this must be a case of tuberculous poisoning, but rather undermines the functional efficiency of all the systems so that the manifestations are regarded as primary systemic aberrations of function. From this point of view, we see how the endocrine system, the vaso-motor and cardiac system, the gastro-intestinal, hematopoietic, nervous and genital systems may all coincidentally or independently be at fault in accordance with their degree of resistance to tuberculous toxins. Any systemic abnormality of function may be due to tuberculous toxins, although there may be no tuberculous stigmata to suggest the relationship, and we exclude all probability by not finding any proof of tuberculosis of the lungs. It has even been suggested that certain systems are usually first and primarily affected and that the other systemic derangements are secondary consequences. The first effects of tuberculous toxins are said to be felt in the endocrine system, causing a fall of blood pressure and insufficiency of vaso-motor tone. The next consequences are said to be felt in the hemato-poietic and gastro-intestinal systems. The sluggish circulation in the bone marrow injures the production of red and white cells so that anemia and chlorosis result; the sluggish circulation in the gastro-intestinal tract results in over-stimulation followed by loss of secretory function; disorders of nutrition and development result and all kinds

of nervous and pelvic aberrations are possible. Inhibition of development of the genitalia is common with menstrual abnormalities of all sorts and conditions which are usually regarded as primary. Relaxed, sluggish circulation in the skin is said to cause an overgrowth of lanugo, a tendency to exudation is seen in the wet, clammy hands and feet, chilblains, sweats, erythemas, especially erythema nodosum, ezeemas, tuberculides, tinea versicolor, scrofulides, and the exudative diathesis of Czerny. Insufficiency of the cardiac muscle has led to the diagnosis of heart failure. Heisler and Scholl report a case of threatened death from heart failure with no suggestions of tuberculosis of the bronchial glands which was not thought of until the x-ray plates were seen. Adrenal asystole has been well described with reports of cases with a tuberculous etiology. The complications of vaso-motor, cardiac, endocrinal, hemato-poietous causes and effects make up an inextricable confusion of clinical types which are really logically connected when we follow the thread of tuberculous etiology. The sum total of the disturbances induced by the absorption of tuberculous toxins during childhood should not be regarded, as it usually is, as the inevitable consequence of an inherited anlage against which we can do very little, but as an indication of the necessity of stopping this absorption and getting rid of the tuberculous processes in the bronchial glands which we do not suspect because they are not revealed by an examination of the lungs. Stillier's picture of asthenia universalis represents the inhibition of development and the disturbances in the various systems caused by the tuberculous toxemia which is too often regarded as the expression of a "lymphatic temperament" or an "inherited, congenital predisposition" which is difficult to overcome because the constitution of the child was wrong at the start. The anaphylactic effect upon the mucous membranes, shown by the coryzas and bronchitides, suggests a comparison with the feeble, weakened, little old baby poisoned fundamentally by syphilis. These babies and children need specific treatment for tuberculosis just as the others need it for syphilis but, unfortunately, because we find nothing in the lungs we say there is no tuberculosis. If the day ever comes when we believe that tuberculosis of the lungs is a possibility which must be considered for every child, and that it is due to some factors permitting its development which we cannot guard against because of our ignorance, then the real prevention of tuberculosis will consist in watching the child and discovering the earliest possible beginning of this development. It begins to seem as if tuberculosis of the lungs was secondary to that of the bronchial glands and that our diagnosis must endeavor to determine the presence of danger in the bronchial glands before it gets into the lungs. This can best be done in the schools by the periodical examination of

all children, of each and every child, regardless of good health and the apparent necessity for such an examination. How many hours through the year are given to tuition? Could we not give two hours a year to the best known method for the detection of tuberculous processes in time to protect the future wage-earner?

Before we can understand the subject of tuberculosis of the lungs we must know when it begins and why and how. Today our ignorance of these three facts is complete. We have been studying only its later stages. We must learn to unravel the complicated confusion caused by the inextricable mingling of cause and effect of systemic depressions and to trace throughout its labyrinthine developments the results of tuberculous toxemia, which we are now treating as primary diseases. Since tuberculosis of the bronchial glands begins in the first days of infancy, let us begin our study of tuberculosis with all the infants coming under our care and, as Combe does, test each one for evidence of the presence of tubercle bacilli within its body and the production of allergic, of sensitization to tubercle toxins. The Moro or the Mantoux, which Combe prefers, could easily be made every month and the records kept. In this way we should learn whether sensitization to tubercle bacilli is the result of exposure and bad environment or whether there is reason to suspect that tubercle bacilli are as constant residents as colon bacilli and therefore the development of tuberculous processes is subject to the same laws as the development of morbid processes by colon or any other bacilli habitually resident. With practically all children sensitized to tubercle bacilli by the time they reach maturity, and only a very small percentage developing tuberculosis, it would seem as if the practical prevention of the disease might consist in detecting the earliest stages of development rather than in endeavoring to content ourselves with efforts to prevent the entrance of tubercle bacilli into their bodies, which is probably an impossible task. In Australia the death rate has been astonishingly reduced, but even in this most thorough and best organized effort to exterminate tuberculosis that has ever been made the results are temporary and concern only the individual victims. It is more than probable that the supply of victims will be furnished annually, for this report says that the number of cases has not been reduced, and that is especially true of children. If we could devote two hours a year to each pupil in the public schools, we might amass enough information to place our comprehension of tuberculosis upon quite another basis. We are looking after the abnormal children, but that is not enough. We should carefully study the well children in order to prevent their becoming abnormal and in order to detect every case of beginning development of tuberculous processes, and arrest them. An open-air school, a little extra feeding, a little rest and a little

looking after in the home, and the dread disaster of the future is averted. The first community to reduce the number of tuberculosis cases will do much to solve the problem for all the world. As yet only the death rate has been reduced and the number of cases goes on increasing and especially among children. The pediatricists and orthopedists need to know the relation of secondary extensions of tuberculous morbidities from the bronchial glands into their special fields of nutrition and joint deformities. It is possible that the whole subject of tuberculous deformities is secondary to tuberculosis of the bronchial glands.

DEFECTIVES IN OUR PRISONS.*

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THE title is used so broadly that, lest the writer be accused of infringing on aspects of the field not his own, a word of explanation will be given. It is obvious, that if one wishes to study medicine, the hospital is the place for such study; and if psychiatry is to be studied, the state hospital is the proper place. So, to be especially interested in the problem of the criminal, implies an interest in the broader social problems of crime, and psychiatry itself is no longer confining its efforts to inmates of hospitals, but is now working on the social problems of the insane.

As a physician I believe I can contribute two things toward the solution of the penal problem: First, a method of study; and secondly, certain facts which have been obtained by using the method of individual study.

As to method: It is hardly fair to claim for medicine the exclusive title to the method of treatment depending upon diagnosis, but it must be admitted that doctors have developed and used this to a greater extent than most. If one goes back a hundred years and follows the sick man to the doctor, he finds two remedies are offered, regardless of the pathological condition existing, namely, purging and bleeding. This is exactly analogous to the modern treatment of the criminal. Regardless of the diagnosis, the treatment is fine or jail.

Investigation into penology in the past has dealt with crime, and we find elaborate tables giving the name of the crime, the season of the year, the name of the article stolen, etc., but these figures have had little or nothing to do with diagnosis as far as the individual is concerned. Treatment has had to do largely with the possible effect upon society.

* Read at a conference of the Prison Association of Rhode Island, in Providence, on Jan. 13, 1917.

* Being Contribution of the Mass. Commission on Mental Disease, whole number 374 (1917:8). The previous contribution (1917:7) was by Doris M. Holmes, entitled "An Analysis of Two Hundred Cases of Delinquency."

At the present time, if a man with a headache goes to a hospital, he is not given morphine to dull his sensibility to pain, but the eyes, the stomach, and the urine are examined, and a cause for the headache is sought. In other words, a diagnosis is made, and then, and not until then, is treatment administered. It is not enough to know the cause of headache in general and administer treatment, but we must know the cause of this particular headache. We are familiar with the wonderful progress made in medicine since this method has become universal. It seems certain that equally good results will come from the application of this method to the criminal class.

It must be borne in mind, of course, that the diagnosis may not be strictly medical; it may be social; it *must always be personal*. This method has been tried out already and a few of the results will show its value, though but a beginning has been made.

It may be made clear that the word *criminal* is not definitive. To say that a man is a criminal in no way describes him; it merely signifies that position he holds in society in a most vague way. It does not even give us a clue to his personal morality or character, as oftentimes what seem to be the real rights of the individual must be limited for the good of society, as in automobile legislation. So, though older studies of crime have given society some aid, they are of no value if the treatment of the individual is to be considered.

There has existed for ages a belief that, though any one of us may commit a crime, there is a group or special type of individual who is prone to delinquency. Lombroso, perhaps, first emphasized this. It was his misfortune that psychiatry was so little advanced in his time that he was unable to see the sameness of his born criminal and our imbecile. *Now*, when we begin the study of an individual criminal, we immediately get at a more fundamental idea of his nature. For instance, under the older classification, we find crime divided into such groups as

Against the person,
Against property, and
Against public order.

This gives us no insight as to the individual or his needs.

After studying a group of felons at the Charlestown State Prison,¹ a more descriptive grouping immediately suggested itself:

First, crimes in which the individual seeks monetary gain. In the struggle for existence, certain individuals drift into the lower ranks of society and become dependents. The average man is usually able to make an honest living and recognizes the truth of the old adage, "Honesty is the best policy." So, though all types may be dishonest and get arrested, the majority of this group are quite obviously handicapped. They are often the unfortunate among us rather than the bad.

This may seem somewhat opposed to Aschaffenberg's theory of economic necessity as a cause of crime, thereby putting the responsibility more on society than on the individual. Needless to say, the feeble-minded are very numerous among these handicapped ones.

Second, crimes due to a manifestation of the sexual impulse. These individuals are frequently abnormal; many are feeble-minded or alcoholic, and many are sex perverts.

Third, crimes due to emotion, such as rage, jealousy, revenge, etc. These are quite often alcoholic, insane or feeble-minded.

This grouping,* as is readily seen, suggests the underlying motive for the crime, showing it to be quite a personal matter, and to some extent describes the individual. It usually indicates quite definitely the line of treatment which should be followed.

Again, we may group our individuals in such a way that we not only explain the commission of the crime but suggest a remedy.

Group No. 1. Crimes due to new social conditions. If we search Colonial records, we find a large proportion of criminal action to have been directed against the Indians. They were not acquainted with European customs and standards and constantly came into conflict with the law. And yet, if we read Red Jacket's speech to the Massachusetts missionary, we are inclined to believe that the Indian was quite as moral as the white man. The high percentage of Italians in Charlestown is another example of this group.

Group No. 2. Environmental cases. We frequently see street urchins who have either picked up or been actually taught to earn their living dishonestly; who have never had an opportunity to learn standards of correct living, and whose crimes seem to be quite largely due to environment.

Group No. 3. The accidental group. This is a small group and one which need not be treated specifically. Punishment will never entirely prevent accidents.

Group No. 4. The voluntary criminal. There are certain individuals who are well endowed mentally and who have no excuse for doing wrong, who voluntarily commit crimes. Punishment, for its deterrent effect, seems to be applicable to this group.

Group No. 5. The physically handicapped. Everyone who has worked with criminals is impressed with the large number of sickly, maimed, and deformed individuals who need medical treatment and social service aid.

Group No. 6. The drug and alcohol addicts. A very large group; more than half the arrests in Massachusetts are for drunkenness, and a large percentage of other crimes, such as assault, are directly due to drunkenness. The folly of locking these individuals up for a few days and then turning them loose indiscriminately

* These groups correspond in a general way to Gordon's greed, lust and malice.

ately, is obvious. The incurable and demented should be segregated; the others should be supervised.

Group No. 7. The insane. Two years ago, seven out of 28 indictments for murder in Massachusetts were against individuals obviously insane. The huge percentage of dementia praecox patients among our vagrants is well known.

In my Bridgewater series,² it appeared that 7% of all persons sentenced for vagrancy were so obviously insane that a physician's examination was not necessary to demonstrate the fact.

Group No. 8. The socially irresponsible. There are certain individuals, not insane and not feeble-minded, who yet are neurotic and unstable, and who are socially irresponsible. These individuals can be recognized though the exact name that should be given them is not settled upon; if they commit a crime, they should be treated as irresponsible persons.

Group No. 9. The feeble-minded. This group probably more than any other constitutes what might be known as the typical criminal. Mental defect is found in all grades of criminals. In Massachusetts, over 50% of a series of prostitutes were found to be feeble-minded; 24% of the inmates at the Reformatory for Women; 15% at the Reformatory for Men; 23% at the Charlestown State Prison. If the feeble-minded patient is actively anti-social, permanent segregation is the only rational method of handling the case. The matter of prevention concerns this group especially, as the female feeble-minded delinquents are notoriously prolific.

It is fair to inquire as to the purposes of penal procedure. There can be but two if the old idea of "An eye for an eye and a tooth for a tooth," be left out: First, and perhaps more important, —the protection of society; second,—the treatment of the individual offender.

The same purposes are behind our modern treatment of a smallpox patient. We isolate to protect society; we treat to cure the individual. Our present penal procedure is as though we were content to isolate our smallpox patients and let them take care of themselves, instead of sending them to a first-class hospital and giving them the best of care. Mr. Osborn aptly remarks that it should be pointed out that if the analogy is to be correct, the smallpox patient should be sent out in a given number of days, whether he is well or not!

Although these two purposes merge one into the other, it seems evident that the protection of society must always be left with the court, as the one studying the individual is at times inclined to sacrifice society for his patient. So a maximum and minimum sentence is probably desirable: the former for the protection of the individual; the latter for the protection of society. It would seem impossible, with the limited time at the disposal of the court, to determine not only guilt, but an accurate diagnosis and plan treatment for each individual; and so, as is done in Ohio with juveniles at present, the

court should determine guilt, and subsequent study of the person's past life and present mental equipment should determine treatment.

Treatment should fall into four main groups:

First, Reform: This should be particularly applicable to intelligent individuals whose delinquency was due to environment or habit. It applies to certain of the alcoholics.

Second, Education: This should provide that each man leaving prison should have a common-school education and some vocational training as an aid to adequate self-support.

Third, Medical Care: Though most prisons have a "jail physician," one rarely finds adequate medical attention given convicts.

Fourth, Profitable Occupation: This should apply to those individuals who are more or less permanently segregated.

The outlook is favorable. Though the ideal has not been reached, we find, scattered all over the country, workers who are being well supported, and there is every reason to hope and believe that the care and treatment of the criminal will become a science and an art rather than a job.

REFERENCES.

¹ Stearns, A. W.: Bulletin No. 10, Massachusetts State Board of Insanity, December, 1915.

² Stearns, A. W.: Bulletin No. 12, Massachusetts State Board of Insanity, August, 1915.

TREATMENT OF SOME OF THE POSTURAL DEFECTS AND HABIT MOTIONS COMMON AMONG THE BLIND.*

By MISS LENNA D. SWINERTON, WATERTOWN, MASS.,

Medical Gymnast at the Perkins Institution and Kindergarten for the Blind.

GENERAL PHYSICAL CONDITIONS OF THE BLIND.

EDUCATORS of the blind in the United States and elsewhere have, from the beginning, recognized that their pupils had special need of physical training. This need they attribute to a series of causes:—first, to the low vitality and impaired nutrition of blind children and youth due to the lack of free physical activity in their early years. Second, to the nature of the disease which caused blindness and at the same time weakened the fibre of the entire nervous system. Third, to the fact that a person working under a constant handicap must necessarily expend more energy in doing a given amount than would be expended by a person of normal faculties. Fourth, to the fact that those who are naturally robust cannot indulge freely in muscular exercise except in surroundings from which all obstructions have been removed.

* Read before the Massachusetts Therapeutic Massage Association, Feb. 15, 1917.

Pupils are received into schools for the blind not younger than five years of age, nor older than nineteen, except by special provision. When they enter they vary as widely in mental and physical assets as they do in years. Some of the little ones have previously been well cared for in nurseries for blind babies, or in good homes where they have been taught to walk, to feed themselves, to button their clothes, go up and down stairs, and to play freely. Others have been waited on by inches and allowed too little venturesome activity by over-indulgent and over-cautious parents.

The longer children of this latter type remain at home, and the older they are when placed in school, the longer it takes them to overcome the timidity, awkwardness, and inertia which such home life has engendered. Under the best of home conditions, lack of sight puts a sufficient check upon the long-range activities and spontaneous play of a child to limit the vigor of his bodily development; and when he also suffers from the effects of inherited syphilis, cerebrospinal meningitis, or other disease, which besides causing his blindness, saps the vitality of his nervous tissue, we can understand at once that his first need is for nutrition. But this is not all,—tasks which, when performed with the aid of sight are comparatively simple, become difficult to the blind worker, young or old. With him stringing beads, reading, writing, skill in using tools or playing musical instruments, and even what should be recreative play, call for close application and the highest co-ordination of his faculties. This means a large proportional output from hour to hour of his already short quantity of energy, thus hastening the oncoming of nervous fatigue, and shortening his period for effective labor. In doing even simple tasks, also, his effort is often so prolonged that he loses a part of that restful reaction which the joy of attainment should bring.

One writer calls attention to the fact that in schools for the blind, "from one half to two thirds of the pupils are able to see light, and one half of these see well enough to keep from running into objects." But this "sight," he suggests, "is not always of advantage to them; to those whose eyes are unequal to the demands made upon them, it is a hindrance." That is, it becomes an eye strain. Personally, I believe that others who have no useful sight often experience fatigue from ear strain, when obliged to work or play in noisy surroundings or walk unattended along a busy street.

If conditions already enumerated point to the need of increased physical resistance in persons deprived of sight; and if the purpose in educating the blind is to enable them to surmount their limitations and to become sufficiently self-helpful to engage in the civic, social, and industrial activities of the communities in which they live, then, obviously, those forms of bodily exercise which increase vital capacity, develop

personal independence, and pleasing presence, and promote manual proficiency, are of the utmost value to them.

In addition to regular gymnasium practice pupils in all schools for the blind are urged to enter courageously in many games and sports—archball, track running, rowing, swimming, skating, coasting, and other activities. A considerable number of these pupils, it should be remembered, have partial sight, which means it is possible for them to protect themselves against collision, and aid in guiding their totally blind companions. Their teachers also are required to lend assistance on the playgrounds.

THE NEED OF CORRECTED GYMNASTICS.

In any assemblage of from two to three hundred boys and girls of school age, we are likely to find several cases of bodily deformity, and we might expect that the number of such cases would be relatively large in a school for the blind. At the Perkins Institution, especially in the kindergarten and primary divisions, we find many children who have postural defects,—heads that drop forward, or turn to one side, accompanied with the consequent round or uneven shoulders; an occasional lateral curvature of the spine; and now and then a little arm or leg hanging half helpless as a result of paralysis.

In the treatment of these cases we have to deal not only with low vitality but other conditions peculiar to each individual. Many children who perceive a ray of light or have partial vision in one eye turn the head continually to one side, which produces a twist or lateral curve in the cervical spine and makes the shoulders unequal in height. Others drop the head far forward, either in the effort to see better or because the light hurts their eyes, or because, if perfectly blind, they have no special incentive to look up, or in many cases from deficient will-power, thus inducing round shoulders and depressed chests. Not a few thrust the abdomen forward as apparently the most convenient *buffer* with which to prevent bumping their heads on the object toward which they are walking. Just why a very large number have one pronated foot I do not know. Probably as babies they have run much less than normal children, and instead have adopted a shiftless habit of standing for long periods at a time in some corner or by a wall where they felt comparatively safe. Some have the trick of standing with one foot on top of the other or sitting with one foot under them.

In attempting to correct these faulty postures we cannot begin by giving the child a mirror and showing him how badly he looks, nor by pointing to mamma and telling him to see how nicely she is standing; pictures are of no avail, and, as yet, our children have been given no study of sculptured forms with a view to awak-

ening their appreciation of the beauty of a well-poised symmetrical human body. Lacking this appreciation, or having but a dim ideal, though we allow them to "feel" of living models in the gymnasium, their comprehension of correct posture must be mainly developed through the muscular sense. Pupils who are intelligent, self-respecting, and painstaking often learn to carry themselves well, while those who are weak-willed, and irresponsible make little gain even after years of patient training. The teacher, however, must aim to keep all cases from growing hopelessly worse until she can interest each child in doing his part toward overcoming his defect.

In the kindergarten and first six grades of the school at Watertown, most of my work is with cases of the neck and shoulder type and with weak ankles and feet. The lines of treatment followed include massage with single and resisted movements of the neck and back, or of the feet and legs, according to the case, also shoulder-blade and walking exercises, arranged to suit the age, interests, and muscular strength of the different children. Exercises under play names, either borrowed from, or in imitation of those tabulated in "Educational Gymnastic Play," are entered into with zest by the little girls and boys; the teacher taking care that good posture is maintained in each movement. Light chest weights, dumb-bells, wands, stall-bars, a balance ladder, and other pieces of gymnasium apparatus, lend variety to the work. A corrective machine, which one little boy named the "elevator," is used for stretching stiffened spines and shortened ligaments. Girls with long hair, who forget to sit up, sometimes find their pig-tails pinned to the backs of their dresses as a helpful reminder.

In postural cases parts of each lesson are given with the patient lying on a table, to remove weight from the spine or localize muscular effort, and a part in sitting position, to emphasize the sense of correct sitting posture.

Just now, many of the children are interested in small Sandow spring dumb-bells; as these bells must be tightly gripped during a part of each movement I hope they may prove helpful to certain pupils who have very flabby hands and equally flabby wills.

For the children having pronated feet the school physician orders laced boots with Thomas soles and heels—sometimes arch supports. He also suggests the methods of treatment to be followed in the simpler types of postural and nervous affections and refers serious cases to orthopedic or other specialists for advice. Most of the children have either kindergarten games or general gymnastics with the class teacher, and all have outdoor play, therefore their time with me is spent in localized individual work. For various reasons I can give each pupil only about three hours a week, which seems much too little, and is, when we consider that for several periods each day the children sit using two hands in

front of them,—in reading, writing, working, in whatever they do it is always with both hands out in front, which increases their tendency to lean forward. For this reason I choose always for them exercises of extension and expansion and discard, if possible, any which tend to cramp the chest or force the head forward.

HABIT MOTIONS.

If some of our pupils are slow in correcting faulty postures, it seems well-nigh impossible for others to overcome the habit of indulging in erratic, inane, and sometimes uncouth motions. Here again, inability to use a mirror or to appreciate the beauty of human comeliness, coupled with a minus quantity of self-control, makes the usual methods of treating "tie" difficult to adapt. Is it not possible that some of these habits have their origin in a natural craving for sense pleasure? One child, for example, who can perceive a faint ray of light, shakes his hands continually in front of his eyes. To him it is "seeing"—"making little days and nights," one said. Another seated with fingers thrust into his eyes, because, perhaps, pressure upon the eye-ball gives him a sensation of light. German scientists tell us that this is an expression of hunger for light. With still another, may not the constant rolling of the head or swaying or vibrating the body, be due to a desire for free muscular activity which he is too timid or too indolent to gratify in some better way? Perhaps these ungratified cravings aggregate the too common tendency to indulge in injurious secret practices.

In the habit motions arising from hunger for light or sight, we cannot remove the cause. We should win the child's affection and try in every possible way, including permissible forms of discipline, to teach him to put forth inhibitory effort, at the same time keeping his hands busy with pleasurable occupations or interesting playthings. In the other group of cases, vigorous, progressive, coördinatory gymnastics and supervised play should be urged to the limit of the child's endurance, though if he be mentally sub-normal or downright lazy, or both, the teacher is to be pitted.

Another type of motion, such as jerking the fingers or limbs or whirling the body around and around, would seem to be due to excessive nervous irritability. Children having these habits should be removed from exciting surroundings and given ample room to work or play quietly by themselves, preferably in the open air. There should be given regular periods of rest, and such forms of exercise as tend to develop "power through repose"; massage of the back, slow passive or relaxing exercises, followed by a few active movements for balance and control.

But some one may ask: "But why struggle with all these conditions? Can enough be accomplished to justify the cost?" Perhaps not. My answer is that lack of sight is enough of a

handicap to put upon one individual without additional disabilities. If the blind man is to succeed socially and financially he must have, first of all, friends; hence, his necessity for an unrepulsive presence; and if his daily output of nervous energy is to be constantly in excess of the normal, then, if he is to survive in the struggle for wage-earning existence, he must, during his growing years, be given every opportunity for establishing sound health.

Clinical Department.

A CASE OF IRITIS AND OPTIC NEURITIS FOLLOWING TONSILLITIS.

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It is agreed among ophthalmologists that iritis, with a few exceptions, is not an isolated ocular disease, but depends, usually, for its development upon microorganisms or their toxins.

DeSchweinitz is strongly of this opinion, and says that uveal tract inflammations are manifestations, usually, of systemic affections, and advises a thorough search for local areas of sepsis from which the bacterial element or its toxin arises.

It naturally follows that the mouth, teeth, tonsils, the nasal accessory sinuses and the intestinal tract must be carefully examined, also the prostate, urethra, seminal vesicles and the pelvic organs.

Syphilis and tuberculosis are often causes of iritis, but even with one or both of these conditions present the above-named regions should not be neglected.

Optic neuritis, just as iritis, depends upon an infective agent in the blood for its cause. It frequently follows rheumatism, tuberculosis, syphilis, gout, influenza, diabetes, smallpox, and scarlet fever, or may come directly from a focus of infection in the mucous membrane of the mouth, nose, or throat. Such toxic agents as lead and alcohol, also menstrual disturbances, auto-intoxication, overwork and prolonged eyestrain are etiological factors.

If the infective focus is found in these cases and absolutely eliminated, a brilliant result can be achieved.

The writer wishes to report a case where both iritis and optic neuritis developed after an attack of tonsillitis and where a tonsillectomy resulted in an apparent cure.

C. D., stenographer, aged 21, single, was seen at her home, October 19, 1915. She gave a history of

attacks of tonsillitis, usually at yearly intervals, followed, one week after the development of the tonsillitis, by pain, blurring and inflammation of both eyes.

Upon examination she was found to be convalescing from an acute follicular tonsillitis, and showed enlarged and tender cervical glands and extreme injection of the cornea of the right eye. The eye was very painful and sensitive to light. She was advised to enter the Massachusetts Eye and Ear Infirmary for treatment. She visited the Out-Patient Department on October 20, and the record is quoted below.

"Oct. 20. Diagnosis: Iritis of right eye. Optic neuritis of both eyes. Pupil well dilated and regular. Cornea apparently clear. Upper lid slightly swollen. No evidence of syphilis.

Oct. 25. Less pain in right eye. Left eye, slight ciliary injection.

Oct. 29. Nasal examination shows rhinitis and diseased tonsils. X-ray report: Teeth and accessory sinuses negative."

Dr. Quackenboss agreed with the writer that the tonsils should be removed. Accordingly on Nov. 4 her tonsils were enucleated at her home. The crypts were engorged with caseous material and the tonsils showed a chronic low-grade inflammation. The recovery from the operation was uneventful.

Infirmary record, continued:

"Nov. 11. Wassermann negative.

Nov. 30. Vision with present lenses: right eye, 20/40; left eye, 20/30+.

Dec. 7. No floating opacities seen today.

Dec. 14. Vision with glasses: right eye, 20/50; left eye, 20/40. Has a very definite swelling of both nerve heads, at least two diopters, with some dilatation of vessels.

Dec. 21. Vision with glasses: right eye, 20/70+; left eye, 20/50—. Swelling is about the same today.

Dec. 22. Recommended for admission to the house. Lumbar puncture."

House Record:

"Dec. 22. Right eye. Lids, cilia and conjunctiva negative. Cornea negative. Anterior chamber normal. Lens and media clear. Vitreous clear. Disc swollen, two diopters. Veins large.

Dec. 23. Discharged to the Out-Patient Department unchanged. Vision on discharge: right eye, 5/100+1.5 = 20/200; left eye, 10/100+1.5 = 20/70. Report of spinal fluid: pressure, 200. Cells, 15 per cu. cm. Proteids, alcohol, slightly +. (NH₄)₂SO₄, 0. Wassermann, negative. Gold, negative."

Out-Patient Department:

"Dec. 28. Right eye, +1.50 = 20/70; left eye, +1.50 = 20/50.

Jan. 4, 1916. Vision: right eye, +1.50 = 20/50; left eye, +1.50 = 20/70+.

Jan. 11. Vision: right eye, +1.50 = 20/40; left eye, +1.50 = 20/50. Swelling of nerve heads better in both eyes. Left eye less swollen than right eye.

Jan. 18. Vision: right eye, +1.50 = 20/20; left eye, +1.50 = 20/20. Still slight swelling of nerve heads. Can work in a week.

Feb. 1. Vision: right eye, +1.50 = 20/20; left eye, +1.50 = 20/20.

March 1. Vision: right eye, +1.50 = 20/20; left eye, +1.50 = 20/20. Discs look perfectly normal outside of slight blurring."

The patient started at her work as stenographer on Jan. 25, 1916, and has not missed a day since. There has not been the slightest suggestion of a re-

turn of the iritis or the optic neuritis to this date, March 20, 1917.

The writer wishes to express his thanks to Dr. J. B. Ayer for his report of the examination of the spinal fluid.



A WONDERFUL PROVISION OF NATURE FOR DRAINAGE OF A PELVIC ABS- CESS. EVOLUTION OF AN AD- VENTITIOUS DRAINAGE TUBE.

BY HORACE PACKARD, M.D., F. A. C. S., BOSTON,

Professor of Surgery, Boston University.

A CASE recently operated on for the radical cure of chronic pelvic abscess presented such a surprising and wholly unique (in the writer's experience) mechanism for drainage that this record is offered. Briefly, a distinct and perfectly formed tube standing out clearly, and practically free from adhesion with any of the adjacent viscera, extended from the depths of the pelvis up along the left side to an opening in the abdominal wall, a little to the left of the median line and about two inches below the umbilicus. It had a slight mesenteric-like attachment to the pelvic parietes, easily separated by finger dissection and snipping scissors, and was covered with a smooth peritoneum-like covering. The history of the case is briefly as follows:

Two years ago, the patient was operated on in a suburban hospital for an obscure tumefaction of the lower abdomen and pelvis. A suprapubic incision was made. Digital exploration was almost at once followed by a gush of pus. A conservative course then seemed wise and a drainage tube was adjusted and the abdominal wound closed, all but an exit for the drain. After seven or eight weeks the patient began to be up and about daily but with a discharging sinus. A ventral hernia gradually developed which, at the time of the writer's operation, was large—as big as a very large grapefruit.

With the patient in the Trendelenburg posture an incision was cautiously made through the lax, thin stretched-out cutaneous scar tissue at the site of the ventral hernia. On reaching the abdominal cavity I was much surprised to find that there were practically no adhesions of intestinal loops about the ventral hernia opening, nor with the inflammatory mass filling the pelvis. The caecum and transverse colon were free and the sigmoid also, except as it merged into the rectum and passed down through the left side of the inflammatory mass. The only adhesion was an elongated tail of omentum which extended down into the pelvis.

The operation performed by the writer consisted in enucleation of both tubes—no longer recognizable as such. Both ovaries were inextricably mixed up in the ancient inflammatory mass and of course had to come out also. Little or nothing in the way of "lines of cleavage" could be found which made the operation extremely blind and menacing to adjacent structures—rectum, bladder and ureters. To insure effective down drainage, the uterus was also removed. At the present writing the patient has prac-

tically recovered from the pelvic abscess part of her difficulties. It seemed futile to attempt repair of the ventral hernia since the operative field must be assumed to be strewn with septic matter, but with perhaps more optimism than discretion, and with a forlorn hope of at least reducing somewhat the large hernial opening, the now widely separated edges of the recti muscles were quickly exposed, freshened and drawn together with three deeply placed strong linen sutures. Gauze drainage wicks were adjusted both abdominally and vaginally. Free discharge of sanguineous sero-purulent fluid occurred both up and down for a few days. The abdominal wound closed throughout except for a lingering sinus at the drainage opening and where the linen sutures were placed. The sutures were later hooked to the surface with a crochet needle and removed.

What are the constructive forces residing within which enables a patient to evolve a tubular structure several inches long to meet the necessities of drainage of a deeply-seated abscess? It is useless to conjecture, for we have no precedents to guide us except the laws of evolution. That this individual should have been able to evolve a mechanism to meet her needs is possibly explainable by the fact that she possesses remarkable cellular potentialities. For two years she had carried a focus of suppuration which yielded copious discharge of pus. Through all this septic handicap and depletion of her forces she carried and maintained a thick head of hair reaching to her ankles. She had also carried the ventral hernia without support except such as was afforded by a common cotton binder. She also exhibited remarkable tissue repair following the operation; for, according to usual precedents in such cases, the wound should have suppurated throughout. I have no knowledge of the character or source of the original infection. A culture taken from the sinus just prior to the operation showed a simple staphylococcus infection.

DO VISCERAL ADHESIONS EVER RAREFY AND DISAPPEAR?

From the writer's experience in similar cases it seems almost impossible to think of such a case following the course above described in the history given, without intra-visceral and ventro-visceral adhesions. The adventitious drainage tube was a totally separate entity; in no part of its length did loops of intestines, omentum or pelvic parietes enter into the structure.

This case, with two others which have occurred in the writer's experience, leads to speculation upon the possibility or the probability that, under favoring conditions, abdominal visceral adhesions undergo rarefaction and disappear. In both widespread infection of the peritoneum occurred, one from a pelvic abscess, the other from an appendicular abscess. Long after, I had opportunity of opening the abdomen, in one for repair of a small fecal fistula, and the other the removal of an ovarian tumor. In both, appearances indicated that there had been a remarkable loosening up and rarefaction of adhesions.

A CASE OF TUBAL PREGNANCY.

BY EDWARD H. MACKAY, CLINTON, MASS.

THE following case is recorded with a view to adding to the literature upon extrauterine pregnancy, a case, the original cause of which could with reasonable probability be traced to an acute inflammation of the vermiform appendix.

Mrs. A. B., aged twenty-eight years, and a housewife, was admitted to the Clinton Hospital on October 25, 1916. Her mother died at the age of forty-nine years, of cancer of the stomach. Otherwise there was nothing of importance in the family history. In 1907 she was operated upon for acute suppurative appendicitis. Drainage was employed and her recovery was uneventful. Although her marriage took place in 1912 there were no pregnancies previous to that now recorded. The patient's catamenia began at the age of twelve years and were of the thirty-day type with an occasional irregularity of two or three days. On September 20, which was two days overtime, she menstruated, with nothing unusual to report. On October 17 she summoned her physician on account of a discomfort in the right upper quadrant of the abdomen. Examination of the upper abdomen revealed nothing tangible to account for the patient's complaint. There was, however, on October 18, a recurrence of pain under the right costal border and more acute in character. Before the arrival of her physician she had obtained relief by voiding about twenty-four ounces of urine that was found to be normal. Menstruation was established October 22, again two days overtime. There was more pain than usual especially in the right side of the pelvis. It was acute and spasmodic in character. There was no nausea, vomiting or evidence of shock; the pulse was ninety and of good volume.

On October 25 there was a recurrence of pain, again acute and associated with a perceptible distention of the lower abdomen. Tenderness and muscle rigidity were pronounced upon the right side of the abdomen. The indications for operation were deemed urgent and the abdomen was opened through a right rectus incision. A considerable amount of free blood was present in the abdominal cavity. The right adnexa were found involved in a mass of adhesions from which the distended tube was soon separated and exposed. The tube was unruptured but bleeding freely through its fimbriated extremity. The amount of free blood was unusual in the presence of a tubal abortion without rupture. The walls of the Fallopian tube were distorted, thick and firm, apparently the seat of pathological changes. The tube was excised. The left tube and both ovaries were healthy. The abdominal wound was closed without drainage. Convalescence was uninterrupted and the patient was discharged well on November 12.

In reviewing this case one is led to the conclusion that the pathological changes in the right Fallopian tube, being unilateral, were probably a sequence of the inflamed appendix; and that the detention of the ovum in the right tube without all probability was caused by the diseased condition of its walls.

A CASE OF AMEBIC ABSCESS OF THE LIVER IN A GUARDSMAN RECENTLY RETURNED FROM THE MEXICAN BORDER.

BY LESTER ADAMS, M.D., BANGOR, MAINE.

A WHITE man, aged 38, was admitted to the medical service of Dr. Wm. P. McNally at the Eastern Maine General Hospital on Dec. 13, 1916, complaining of pain in the right side, loss of weight and strength.

Family History. Mother died of tuberculosis 5 years ago. There are brothers and sisters living and well.

Personal History. Patient had diseases of childhood, and typhoid 20 years ago, being well with these exceptions up to the time of the present illness. Had used alcohol moderately. Denied history of chancre. Has been married but wife died 5 years ago of "consumption." She bore no children and had no miscarriages.

Present Illness. He went to the Mexican Border in June, 1916, with the National Guard, and was well up to the night of Sept. 5. At this time, while on guard duty he was taken with sharp pain in abdomen, followed in two hours by diarrhoea. The bowel movements were frequent, contained mucus and blood, and the condition persisted until his return to the North in the middle of October. Since that time he has been incapacitated by pain in the liver region. This has taken the form of a dull ache in front and in back. It has been worse at night, has occasionally been paroxysmal and has necessitated the use of morphine. There have been no sharp cramps such as accompanied the diarrhoea, and bowels have been slightly constipated, requiring an occasional saline cathartic. His appetite has been poor, and he feels that he has been failing constantly in strength.

Present Examination. The patient appears distinctly ill. The eyes are sunken, the expression anxious. The skin and conjunctivae have a muddy tint. There is marked emaciation.

The heart is not enlarged to percussion, and the sounds are clear, the pulse regular in force and rhythm, good volume and tension, 80 to the minute.

The lungs are resonant to percussion and the breath sounds clear. No rales are heard.

The liver dullness begins at the 4th interspace anteriorly and at the 9th rib behind. It extends to about 6 cm. below the costal margin in the right mamillary line, and 2 cm. below the costal margin in the left mamillary line. There is a visible fullness in the region of the liver and the respiratory movements are limited on this side. Palpation elicits tenderness at costal margin in front and behind, and there is moderate rigidity of the abdominal muscles more marked on the right. There is also tenderness over the course of the ascending colon.

X-ray examination shows great increase in the size of the liver, principally on right. White blood count, 11,000; red blood count, 3,000,000; hemoglobin (Dare), 56%. Differential count shows a relative increase in the polymorphonuclear neutrophils, no increase in the eosinophiles. Wassermann test negative. Repeated examinations of the stools after normal movements and after saline catharsis failed to show amebae. There was continued fever be-

tween 99 and 100 during the first week of observation. Later there were intermissions.

Because of the history and findings, a liver abscess was suspected, and on December 27 the patient was transferred to the service of Dr. E. B. Sanger for operation. A right rectus incision was made, beginning at the costal margin. The liver edge was found to be thick and the tissue soft. In the right lobe posteriorly there was fluctuation, and during the manipulation the tissue was torn, liberating a large amount of pus (about 1 litre). A large cavity could then be felt occupying nearly the whole right lobe of the liver, having a wall in places the thickness of a finger. The wound was closed with drainage.

Examination of the pus showed it to be thick, reddish brown in color, containing large pieces of necrotic liver. Microscopically there were pus and red blood cells, and debris. No amebae were found. No bacteria were found in smears or in cultures in plain agar and broth. Examination of the pus draining from the wound, 5 days after operation, showed many active amebae containing granules and red blood cells.

Immediately after operation the patient seemed greatly relieved, was entirely free from the pain, and for a week seemed to gain in strength. After that time the condition showed progressive weakness, and he died Jan. 18. No emetine or other drug to kill the amebae was given. The terminal symptoms were those of bronchopneumonia. There was no evidence of general peritonitis. Autopsy was not permitted.

Distribution of amebic dysentery in United States. Amebic dysentery is endemic in the Southern States, while sporadic cases have been reported from New England to the Western coast. It depends upon the ingestion of the *Endameba histolytica* in drinking water or food.

Diagnosis. Deaderick and Thompson state in "Endemic Diseases of the Southern States": "The absolute diagnosis of amebic dysentery upon clinical findings alone is usually impossible, although certain symptoms are very suggestive. A disease of acute onset with nausea and vomiting and gripping diarrhea, especially in endemic centres of amebic dysentery, must be looked upon with suspicion. Again, a disease of insidious onset, with chronic diarrhea, emaciation, etc., should be considered at least possibly amebic dysentery. It is, however, upon microscopic examination of the feces or pus from an hepatic abscess for the *Endameba histolytica* that the final diagnosis must rest."

While motionless amebae can be recognized, it is most desirable to observe motility in order to insure identification. Text-books on diagnosis emphasize the importance of securing fresh specimens of stools for examination, and of warming the slide by use of the warm stage. Improvised methods are also successful, such as warming the microscope stage by a micro burner or by electric bulbs. It is also recommended to examine particles of mucus that occur in the stools, or to secure mucus by passage of a rectal tube. The differ-

entiation of the pathogenic *endameba histolytica* and the non-pathogenic *endameba coli* is also fully considered, and is of importance here.

Symptoms of Amebic Dysentery (abstracted from Osler's Practice).

Three groups are recognized according to symptoms:

Mild form. Infection may be present for a month or two before the individual is aware of it. There may be vague symptoms: headache, lassitude, weakness, slight abdominal pains, occasional diarrhea. Amebae may persist in stools without symptoms. Liver abscess may occur in these cases.

Acute amebic dysentery. Many cases have an acute onset. Pain and tenesmus are severe. The stools are bloody, or blood and mucus occur together. In very severe cases there may be constant tenesmus and pain of great intensity, and the passage every few minutes of a little blood and mucus. The temperature as a rule is not high. The heart action may become feeble, the patient may become rapidly emaciated, and death may occur within a week of onset. While in a majority of instances the patient recovers, in others the disease may become chronic.

Chronic amebic dysentery. The disease may be subacute from onset, and gradually passes into a chronic stage, the special characteristic of which is alternating periods of constipation and diarrhea. These may occur over a period of months, or a year or more. Many of these patients do not feel ill, and retain their nutrition in a remarkable way. Alternating periods of improvement, with attacks of diarrhea, are the rule. The appetite is capricious, the digestion disordered, and slight errors in diet are apt to be followed at once by an increase in the number of the stools. The tongue is often red, glazed and beefy. In protracted cases emaciation may be extreme.

Prognosis. Death may occur during the acute stages, as mentioned, as a result of the intestinal lesions. There occur also perforations of intestinal ulcers, with resulting peritonitis. In the long-protracted cases death may occur from intercurrent diseases, as tuberculosis or pneumonia. As a cause of death, liver abscess is mentioned second in importance to the severe intestinal lesions. Figures quoted by Deaderick and Thompson show that the mortality varies among different classes and with different treatment from 2.9 to 34.2%. The importance of recurrence is emphasized. The prognosis in cases with acute onset is not so good as in those with gradual onset. Complications influence the prognosis.

Treatment. Emetin, one of the alkaloids of ipecac, has been found to be a specific, killing the ameba in dilutions of 1-10,000 to 1-50,000. This is given by mouth or preferably hypodermically or intravenously. Hypodermic doses of 1/3 to 5 or 6 grains have been given in salt solution, the frequency and number of doses regu-

lated by examination of the stools. The larger doses are said to be irritating, but seldom cause nausea or vomiting.

Hepatic abscess. Osler mentions (Practice of Medicine) that in 119 cases of amebic dysentery, there were 27 cases of abscess. Of these, 18 came to autopsy. In 10 the abscess was single, in 8, multiple. He records a case in which abscess occurred six years after the onset of the dysentery, although usually it develops in two months.

The late Dr. A. O. J. Kelly (Osler's System) quoted Manson as follows:

"Golden rules in tropical practice are to think of hepatic abscess in cases of progressive deterioration of health, and to suspect liver abscess in all obscure abdominal cases associated with evening rise of temperature, and this particularly if there be enlargement of or pain in the liver, leucocytosis, and a history of dysentery—not necessarily recent dysentery. If doubt exists there should be no hesitation in having early recourse to the aspirator to clear up the diagnosis."

The constitutional symptoms include chills, fever, sweating, the hepatic facies, with muddy or icteric tint to the skin and conjunctivae. The leucocyte count may be normal or greatly increased with relative increase in the polynuclear cells.

The liver shows enlargement, giving a characteristic dome-shaped contour to the diaphragm if an abscess of sufficient size is located in the right lobe.

Untreated abscesses rupture into the lung, peritoneum, intestine, pericardium, stomach, bile duct, vena cava, kidney, and lumbosacral region. Spontaneous healing with recovery occurs occasionally after rupture into a bronchus.

Deaderick and Thompson state, "If the hepatic abscess be small, it will probably usually yield to the general emetine treatment alone. Rogers early reported the aspiration of liver abscess and the injection of the cavity with one grain of emetine dissolved in one ounce of normal salt solution. This with small and medium-sized abscesses is usually sufficient, but with large abscesses a radical operation may be necessary, although Cantlie considers 'cutting' operations 'over-heroic,' and that better results are obtained by the use of a trocar and cannula. A recent case treated by one of us was promptly cured after evacuation of the pus and daily injections of 1/3 grain of emetine."

Conclusion. Amebic abscess is rare in this part of the United States, so that it is not readily diagnosed or suspected. The occurrence of the condition in a member of the National Guard, recently returned from a region where amebic dysentery is known to be endemic, suggests that there may be other similar cases. Successful treatment depends largely on early diagnosis.

Society Report.

NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

THE sixth meeting of the Society was held at the Boston City Hospital on Wednesday, December 13, 1916, with the President, Dr. Abner Post, in the chair.

The following cases were presented and discussed:

1. MERCURIAL STOMATITIS.

Presented by DR. THORNDIKE.

The patient, in the full efflorescence of secondary syphilis, had received two inunctions of a dram each of the official unguentum hydrarg., and forthwith developed a malignant stomatitis. No other toxic symptoms were present. The gums were tender, soft, spongy, and almost fungating. The tongue was swollen, covered with an extremely heavy coat and emitted the characteristic offensive, mercurial fetor. The lower jaw could be moved only with great discomfort.

Such a susceptibility to mercury had never before been observed by the exhibitor, who had instituted treatment along homeopathic lines—in other words, treating this mercurial stomatitis with a mercurial salt, viz. calomel 2, Liq. Calcis 250. After the first twenty-four hours the fetor disappeared entirely and the inflammation subsided to a very marked extent. It is interesting that a mercurial salt should be healing in a case of mercurial stomatitis. Dr. White inquired if anything was known about the condition of the patient's kidneys. He recalled an old man who had taken three capsules of a proprietary iodine preparation. Incidentally, these capsules were stated to be free from the frequently poisonous effects of the drug. The man broke out into vegetative lesions, which soon broke down into rapidly spreading ulcers, and in less than a week the man was dead. At autopsy one kidney was found to be totally obliterated, and the other exhibited about one-third of its substance capable of normal function. Dr. Post remarked that the use of calomel wash was paralleled by the use of bichloride wash in similar circumstances.

2. CONGENITAL SYPHILIS.

Presented by DR. THORNDIKE.

The patient's father acquired syphilis at eighteen years of age, married five years later, received treatment during this time, and died subsequently of arteriosclerosis. The mother's health was delicate. One sister died of lues at two months of age. The patient's childhood was stormy. For the first year and a half there were no adult hairs. The child did not walk until two years of age, and then only with braces. At two and a half years abscesses of the gall-bladder developed. At fourteen menses appeared, were fairly regular, but scanty. At this time the patient was told she had tuberculosis. At the same period the eyebrows were lost, and since then complete alopecia of eyebrows has developed. A breast abscess then developed, followed soon after by another; and since then chronic mastitis of both breasts and inflammation of the upper portion of the pectoral regions has been present. At twenty-four years came typhoid fever followed by involvement of the eyes, probably an interstitial

keratitis. At fifty-six years of age the pelvic organs were removed. All teeth have been extracted. The Wassermann test was negative a year ago, and examination of the spinal fluid also proved negative. The skin in general is now dry and xerodermic. The nails are thin, brittle, and badly developed. Recently there have been no general symptoms.

Under the injunction of mercury this unfortunate woman has improved very much, and following the intravenous administration of diarsenol still further improvement has been very marked.

3. SPOROTRICHOSIS.

Presented by DR. BLAISDELL.

The first case of sporotrichosis in New England; certainly the first to be reported in the literature.

History. The boy came to a local hospital about the middle of August, 1916. He first noticed on his forefinger a lesion which he described as a wart. After a week the lesion began to exude pus, and by that time the nail of the right forefinger had become involved. A diagnosis of paronychia was made in the Surgical Clinic, and the condition was treated accordingly with boracic soaks, etc. The condition improved for the time being and then grew worse. Later, a small nodule developed on the back of the right hand and was treated for about a month. The boy then came to the Skin Clinic of the Massachusetts General Hospital, where sporotrichosis was suspected. When first seen by us the patient presented a paronychial condition about the forefinger and nodules running up the arm, lesions varying in size from a pea to groups of four or five nodules. No glands were palpable and there was no involvement of the axilla. Cultures were taken, and in the course of six days four tubes of pure culture of sporotrichosis were developed.

The boy was given K. I. gr. fifteen t.i.d. and the lesions subsided. He remained in the Skin Ward one week and then went home. The patient then stopped all treatment and the lesions promptly recurred. He then reentered the ward and K. I. was administered again. This time some of the nodules broke down.

Sporotrichosis is found in "vegetable matter" and among horses. It is interesting, therefore, to note that this boy has always been a city dweller, living in Cambridge, and claims that he has never been twenty-five miles away from Boston. He lives with an uncle who, with his father, works on a city garbage wagon. The boy insists that he has never been to the stable, but has patted the horses in front of his home.

4. A CASE FOR DIAGNOSIS.

Presented by DR. BLAISDELL.

Last coitus eleven weeks ago. The penis is studded with fifteen or twenty, pencil-end-sized, superficial, eroded lesions covered with very slight crusts. Duration, nine days. The patient has treated himself with olive oil and sulphur the past two days, and has altered the appearance somewhat. Some of the lesions are in annular arrangement. There is a large right inguinal gland. Wassermann strongly positive.

5. LUPUS ERYTHEMATOSUS.

Presented by DR. HOWE.

A case of lupus erythematosus of two years' duration. The patient came to the clinic some

time ago with a very marked involvement around the edge of the hair. A variety of treatment has not been followed by any marked change. The process persists about the ear, with more or less clearing and scarring.

6. PSORIASIS.

Presented by DR. THORNDIKE.

The patient presented a typical picture of psoriasis on the extensor surface of the elbows and gives a slightly positive Wassermann test. Dr. Thorndike stated that he finds in his experience with psoriasis that 8.6% give a positive Wassermann test.

7. LUPUS PERNIO (?)

Presented by DR. THORNDIKE.

The pathological condition dates back a year and a half, but during the summer the process greatly subsided. There is at present a markedly erythematous, swollen condition of the fingers and a beginning ulceration, while there are lesions on the forearms which are leaving scars.

The speaker was inclined to regard the case as one of folliculitis, but could not exclude pernio because of the definite improvement evinced during the summer months; on the other hand, he stated that pernio did not leave scars.

8. DERMOLYSIS.

Presented by DR. BURNS.

The present pathological process is similar, if not identical, to a case previously described by Dr. C. J. White under the title of dermolysis. In Dr. White's case the disease was more extensive. The patient presented quite a number of dirty-white, somewhat soft, flat-topped nodules which clinically could not be included in any of the well recognized tumors. Pathologically, the picture was one of great local rarefaction of the corium accompanied by striking tinctorial abnormalities.

Dr. White remarked that his patient was a Russian baker, who for some years had been accustomed to sleep on top of his bread ovens. The present lesions were clinically identical with those of the earlier case.

9. LUPUS ERYTHEMATOSUS.

Presented by DR. HOWE.

The patient came to the Boston City Hospital four months ago with a diagnosis of ringworm of the face, but at that time the similarity to tinea circinata was more striking than at present.

10. PSORIASIS IN A BLACK NEGRO.

Presented by DR. BURNS.

The patient was presented as an example of psoriasis in the Ethiopian race. The lesions on the face were particularly interesting, but the condition of the scalp was quite characteristic of psoriasis. When first seen the process was so much more marked because of lack of treatment—localized, thick, heaped-up, dirty, yellowish scales—that on his very black cheeks a diagnosis was not quite clear until one looked at his body where the eruption was far more typical.

Dr. White drew attention to the marked alopecia present, which he would not call characteristic of psoriasis.

Dr. Harding wished to emphasize the striking similarity of the lesions on the face to cases of yaws which he had seen in West Indian negroes.

11. RODENT ULCER AND RADIUM TREATMENT.

Presented by DR. THORNDIKE.

Dr. Thorndike demonstrated a rodent ulcer nearly healed by radium. He spoke with enthusiasm of his results in other cases and exhibited photographs of previous cures. His practice is to use 50 milligrams of radium with weekly exposures of fifteen to twenty minutes, a method which in his hands seems to bring on healing much more rapidly than stronger applications.

12. HYPERTRICHOSIS.

Presented by DR. THORNDIKE.

The woman presented a complete beard, to which she had applied caustics every other day for five years, and Dr. Thorndike presented her with the query as to the advisability of employing the x-rays for depilation.

Dr. Towle asked as to the practicability of using radium.

Dr. Thorndike doubted the feasibility on account of the necessarily large applications.

Dr. Towle then inquired as to the permanency of x-ray treatment.

Dr. Thorndike cited two cases which were x-rayed three years ago, in which there had been no regrowth up to the present time.

Dr. White spoke of one ardent New York advocate of this method. For his own part he would advise strongly against such a procedure because of the danger of dermatitis actinica, ending possibly in cancer, and because of the disfiguring atrophy, pigmentation and telangiectases which were very apt to accompany these otherwise successful depilations. He would personally regard such a cure as worse than the disease.

13. LYMPHANGIOMA CIRCUMSCRIPTUM(?)

Presented by DR. THORNDIKE.

The patient has been under the exhibitor's care for a year and a half on account of a puzzling condition of the hard palate,—where one can see a few, white, elevated, papular lesions with a central depression. These lesions have caused pain but no ulceration during the year and a half of treatment, until within the last two or three weeks, when superficial erosions have occurred. The lesions have shown a tendency to coalesce, forming a homogeneous plaque, but those surrounding the plaque form as small, round papules, with a central depression. The patient has received anti-syphilitic treatment, but he has shown no improvement. The lesions have been cauterized with trichloroacetic acid and nitrate of silver, but they have not been affected. Two half-hour applications of radium at weekly intervals have, likewise, failed to produce much change. The man is an inveterate smoker, but there is no suggestion of epitheliomatous degeneration.

Dr. White said that Dr. Blaisdell had suggested the possibility of lymphangioma circumscriptum, a diagnosis which seemed the correct one. Dr. White related a personal experience of some years ago, when one of his patients, who had been operated upon with the knife twice and with the electric cautery once by surgeons, was entirely cured by a massive dose of radium in Dr. Abbe's hands.

14. DERMATITIS CALORICA AND KELOID.

Presented by DR. THORNDIKE.

An extensive burn with painful keloidal development. At first the arm was contracted, but under massage the woman now has practically normal action.

Dr. Towle spoke of the highly satisfactory results he was obtaining in these cases from heliotherapy. He stated that some keloids would even-tuate in apparently normal skin after proper and sufficient exposure to the sun.

15. PITYRIASIS ROSEA OR LATE SYPHILIS(?)

Presented by DR. THORNDIKE.

The patient apparently had a typical eruption of pityriasis rosea, but glandular enlargement was also present. When the eruption had nearly disappeared a Wassermann test was made with a triple positive result.

Dr. Thorndike said that he had had three patients within a year with late syphilis who had developed pityriasis rosea. Each patient had presented the mother-spot of pityriasis rosea, so that he did not feel that he was dealing with a recurrent roseola or a reinfection. These eruptions have taken a long time to disappear and have left pigmentation, which has also lasted many months. These coincidences, however, have brought up the question as to whether these eruptions are pityriasis rosea or late syphilis—a question which is difficult to answer.

16. DERMATITIS VENENATA.

Presented by DR. THORNDIKE.

The patient was a typical psoriatic with involvement of the scalp. He sought advice of a friend, who recommended a mixture of sulphur, sage tea and glycerine. This mixture was applied to the scalp, and was followed by an extensive dermatitis venenata.

17. BLASTOMYCOSIS.

Presented by DR. BURNS.

The disease is considered by Boston dermatologists as one of the rarest which they encounter, and the present example is, perhaps, only the third or fourth which has thus far been recorded in the skin department of the Massachusetts General Hospital. The patient is an Armenian, and presents only one area of infection, which involves the rather uncommon site of the eye. Here one sees the whole left ocular area affected with the typical, raw, verrucous, slightly crusting picture of the disease and surrounded by an extraordinarily well developed violet purple border. The patient has reacted promptly and well to curettage and to the ingestion of K. I. and bids fair to recover completely.

18. KERATODERMA ARSENICALE.

Presented by DR. CUMMINS.

The patient was a woman, afflicted with inveterate psoriasis, who had taken really large doses of Fowler's solution over months and years. She showed on her palms and soles clean, thickened, yellow hypertrophy of the stratum corneum. Otherwise there was at present no other evidences of her previous striking over-indulgence in arsenic.

19. DERMATITIS EXFOLIATIVA.

Presented by DR. WHITE.

There was nothing extraordinary in the dermatitis as such, but the patient was presented to remind the Society anew of the practically certain cure obtainable in this disease if the "dry treatment" is instituted early and carried out to the letter in every possible detail. No halfway measures can be permitted and any leniency to the patient or his family must be absolutely forbidden.

A dry, borated, absorbent powder is all that is necessary, but it must be used everywhere and constantly in the greatest amount possible. Any indulgence in ointments or baths is practically sure to bring about a recrudescence of the disease. Such a treatment demands bare walls and bare floors. The first week of the treatment is the hard one for the patient, for great cracks develop in the skin, and the subsequent pain seems almost to cry aloud for ointments or emollient baths. The physician must steel himself against these supplications, and within a few days relief comes, and from then on the patient is entirely comfortable, save for possible dryness of the eyes or of the throat, which yields easily to eyewashes and demulcent drinks. The great slowness of restitution to normality is the great drawback of this method, but it practically never allows a patient to die in this otherwise not infrequently fatal disease.

20. LYMPHANGIOMA CIRCUMSCRIPTUM.

Presented by DR. WHITE.

A typical example of this not uncommon dermatosis.

21. SCLERODERMA.

Presented by DR. WHITE.

The patient was a man of 30, an old syphilitic with a moderately positive Wassermann, who, following an attack of pneumonia, had developed a rapidly progressive bronzing, hardening and stiffening of the skin of his face, shoulders, arms and torso. The involvement was extremely swift and the prognosis did not look good. Energetic treatment with thyroid extract, hydro- and mechanotherapy and massage had accomplished already a striking amelioration of symptoms.

In conclusion Dr. Towle exhibited by means of the epidiascope, numerous photographs of the effects of the new Barthe treatment of burns. The results were evidently remarkable.

CHARLES J. WHITE, *Secretary*.

Book Review.

A Text Book of Human Physiology. By ALBERT P. BRUBAKER, A.M., M.D. Fifth Edition. Philadelphia: P. Blakiston's Son and Company. 1916.

The fifth edition of this well-known text book again asserts that "it is primarily intended for students of medicine and practitioners who de-

sire to keep in touch with the progress of physiology." It may be gravely questioned how far either of these groups can be benefited by the book.

It is fair for the medical student to demand the latest developments in each science that he enters, and this without undue theoretical discussion; but it is also most untrue to the present advancing position of medicine if the rapidly changing character of each of the fundamental branches is not pointed out, and the necessity for the development of a really progressive tendency strongly emphasized. This book, however, is one of the latest examples of the old combination of anatomy and physiology and forms a sorry initiation to the physiology of medicine of today. But disregarding the general tenor of the text, we may turn to very specific defects. One reads seventy-five pages upon the physiology of muscle and nerve without finding discussion of the all-important work of Keith Lucas, A. V. Hill, Adrian, or Fletcher and Hopkins, whereby we have had the application of the "all or none" principle to muscle and nerve, and the mechanism of heat and acid production in muscle so beautifully amplified. Four pages are devoted to reflex action, with no reference to the work of Sherrington, by whose efforts this field in physiology has been so enormously widened.

If we turn to another subject, respiration, we find an equal degree of inadequacy. One is informed that "The determination of the composition of the alveolar air is extremely difficult"; a manoeuvre which is being demanded daily of house officers in our large hospitals. And given such analyses, one is given no notion of how they might indicate blood conditions at the moment of sample collection.

The practitioner who wishes now and then to refresh himself upon some isolated point or to get the latest views upon the physiology of his especial interests will need to exercise great leniency to find satisfaction from this book. In the first place he will be faced by a thoroughly inadequate index. Let him look up such a subject as inhibition or inhibitory nerves or endeavor in any way to get from the index a clue to matter on the subject and he will look in vain. Try reciprocal innervation, prothrombin, plethysmograph, colloids, and a host of others which may arise, and in most instances the index will be found entirely lacking. It apparently occupies its position at the end of the book as a sacrifice to custom, not to utility.

The practitioner also may be conceived to require text-book information as a starting point for further incursions into the literature; but, as may be expected, no references are presented, and indeed very little modern physiology is touched upon.

Illustrations are clear, but too frequently anatomical, thus taking space which might well have been devoted to the science which the book is intended to illuminate.

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126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

FRANCIS HENRY BROWN.

FRANCIS HENRY BROWN, senior past editor of the BOSTON MEDICAL AND SURGICAL JOURNAL, died at the Boston City Hospital on May 16, 1917, as the result of a distressing street car accident. He was the oldest survivor of a group of men of a former generation in medicine, whose activities early contributed in a marked degree to the development of medical journalism in America, and extended quietly in many fields of usefulness through a long and busy life.

Dr. Brown was born in Boston, on August 8, 1835, the son of Francis Brown and Caroline Matilda Kuhn. After obtaining his preliminary education at the Boston Latin School he received from Harvard the degrees of A.B. in 1857 and A.M. and M.D. in 1861. From 1857 to 1859 he was assistant instructor in chemistry at Harvard. At the outbreak of the Civil War he en-

tered the U. S. Army, in which he served as assistant surgeon from 1862 to 1864. Later he was for a time assistant surgeon in the U. S. Public Health and Marine Hospital Service.

At the close of the Civil War, Dr. Brown returned to Boston, where he became a founder and surgeon of the Children's Hospital. He always retained an active interest in this institution and served as its secretary until his death. He was also for a time aural surgeon at the Boston City Hospital, surgeon to the Boston Dispensary from 1866 to 1872, to St. Joseph's Home in 1869 and 1870, and to St. Elizabeth's Hospital from 1880 to 1882. He was at various times president of the Suffolk District Medical Society, treasurer of the Obstetrical Society of Boston, secretary of the Class of 1857 of Harvard College, and a member of the American Academy of Medicine, Massachusetts Medical Society, Boston Medical Library Association, American Public Health Association, American Library Association, Massachusetts Medical Benevolent Society and other organizations. He had served as president of the Massachusetts Society of Sons of the American Revolution, and of the St. Botolph and Unitarian Clubs. He had also been secretary of the Bunker Hill Monument Association. He was the author of "Harvard University in the War of 1861-65" and "The Second Church of Boston."

Dr. Brown's connection with the BOSTON MEDICAL AND SURGICAL JOURNAL began in July, 1870, when he became its editor in succession to Dr. Luther Parks, father of the late Dr. Edward L. Parks of this city. In his editorial valedictory Dr. Parks referred to Dr. Brown as one "whose ability as a writer, enterprise and impartiality cannot fail to secure him success." In his own first editorial on July 7, 1870, Dr. Brown wrote that it was his hope "to maintain the JOURNAL where its previous conductors have striven to place it—on the one hand, as the exponent of medical science for the New England States; on the other, as the messenger, through judiciously selected professional literature, of all that is new and valuable in medicine, between the outside world and our own number. With the necessity of accomplishing these two ends in a satisfactory manner, the editor's position is by no means a sinecure. In his intercourse with his brethren, it is his duty to watch well the public pulse; to study thoroughly the body corporate of the profession, both in health and, as it too often mani-

fects itself, in disease; and, with all the wisdom he can control, so to direct the medical mind as best to serve the profession. An able journal should make public opinion, not alone follow it." Finally, in summarizing what he regards as the characteristics of a good medical journal, Dr. Brown emphasized "an advanced and enlightened estimate of the wants of the medical profession, so far progressive as to seek and grasp the new and good from whatever reputable source, so far conservative as to shrink from a too speedy recognition of possible fallacies; a spirit of independence, without any adherence to factions, schools or individuals; which shall freely admit to the JOURNAL worthy articles, useful information or fair discussion on any proper subjects; but which shall as unreservedly reject personal allusions and all manner which shall seem unfitted for our columns."

The duties and ideals of an editor could hardly have been better outlined. How well Dr. Brown lived up to them is evidenced by the dignity and character of the JOURNAL during his administration. He retired from active editorship at the close of the year 1872, but throughout the remainder of his life continued to maintain a warm personal concern in the affairs of the JOURNAL.

For a number of years Dr. Brown had been retired from medical practice, but, unknown to many, had continued an active participation in the affairs of many public charitable institutions, notably the Boston Floating Hospital and the Massachusetts Charitable Fire Society.

Dr. Brown was twice married, in 1861 to Miss Louisa Beckford Eaton of Salem, and in 1871 to Miss Mary Sherwood Wood of Auburn, N. Y., who died in 1912. He is survived by one daughter, Mrs. H. Turner Hodgdon of Cambridge, and by a son, Mr. Louis Francis Brown, business manager of the Burton Holmes Travelogues.

Nearly 82 years of age when he died, Dr. Brown had been for many years a familiar, quiet and benign figure in the older medical profession of Boston, pleasant and sociable to meet, seeking always to do good for others, unostentatiously. In him, the JOURNAL, the many societies with which he was connected, and all those who were privileged to know him personally have lost by death a most kindly, loyal and benevolent friend.

TUBERCULOSIS AND THE WAR.

EVERY physician should read the report of Dr. Herman M. Biggs, which appeared in a recent number of the *Survey*, describing the situation which now exists in France with regard to tuberculous soldiers. For many years France has directed her tuberculosis campaign toward the prevention of tuberculosis among children. While it is generally recognized that this is an important, if not perhaps the most important part of any tuberculosis campaign, nevertheless, for many years to come, adequate provision must be made for adult consumptives. This France has neglected to do, with the result that at present the country is overwhelmed with a vast number of tuberculous soldiers, with utterly inadequate facilities for their care. Although this country is vastly better prepared with institutions for the tuberculous than France ever was, the fact remains that unless these institutions are made available and plans are formulated for increasing their capacity and for cutting all unnecessary red tape, we shall find ourselves facing a situation that will not, it is to be hoped, be as bad as that which now exists in France, but which will be, none the less, a serious one.

At a recent meeting of the National Tuberculosis Association this subject was considered, and the services of the Association offered to the Federal Government to assist in tuberculosis preparedness. In this State, the Board of Trustees of Hospitals for Consumptives, in charge of the four state sanatoria, at North Reading, Lakeville, Westfield and Rutland, comprising over 1000 beds, has already taken up this matter, and is preparing detailed plans whereby this number of beds can be greatly increased and perhaps doubled, if necessary.

Perhaps of greater importance than increasing the number of beds, however, is the question of discovering active cases of tuberculosis among the recruits and among those already in the army, and the taking of definite measures to provide adequate treatment for these cases, and thus to prevent their infecting others, and becoming a burden on the government and on the community later.

There are those who have publicly stated that the open-air life which the soldier or the sailor is supposed to lead is beneficial for the man with incipient tuberculosis, and that the discovery of an early process should by no means

be sufficient reason for his rejection. It is to be doubted if this statement was ever true, and certainly in modern warfare it is very far removed from the truth. While a certain number of these men with an early and inactive lesion may become fit for active duty later on, by far the majority should not be allowed to enter active service, but should be left at home to fill the necessary and less arduous duties of civil life. It is to be hoped, therefore, that every physician, whether or not actively connected with the Army or the Navy, will read Dr. Biggs' report and take to heart the lesson he has there only too plainly written.

THE PASSING OF A FAMOUS PHYSICIAN.

SINCE the ambitious rearers of the tower of Babel scattered over the earth's surface there has been a confusion of tongues, according to the Holy Writ. The present great war itself is ascribed by some, indirectly at least, to the lack of national sympathy engendered by failure to understand one another's ideals and aims. The average well-educated man, besides speaking one language well, has a more or less cursory acquaintance with two or three others. Now and then we meet men whose inclinations turn that way, and who have learned four or five tongues. Until seven or eight are mastered, however, we do not refer to them as linguists. And even then there are hundreds of languages spoken by millions of people of which such a linguist would not comprehend the slightest trace.

Naturally this condition has given rise to attempts at remedying it. There have been many universal languages, but the only one to which any large measure of recognition has been given is Esperanto, which was invented, curiously enough, by a native of a country whose own national existence was so stormy,—Poland. Moreover, although physicians have been accused of speaking a language which no layman can hope to fathom, Esperanto was the brain-child of a physician, Dr. Lazarus Ludwig Zamenhof.

Dr. Zamenhof died on Saturday, April 21, at the age of 57. He had always been delicate physically, but an intellectual giant. At the age of four he read and wrote well. He studied medicine at Moscow University, receiving his

degree in 1885, when he returned to Warsaw and became an ophthalmologist. It seems probable that the polyglot population of that capital directed his attention to the need for a universal language; at any rate, two years later he published the first text-book of Esperanto. After many difficulties it forced its way to notice, and in 1905 the first international congress was held at Boulogne-sur-Mer. Since that time annual meetings have been held, attended by representatives of all nations, and the language has gained for itself an enthusiastic following. There has been even a medical Esperanto association, *Tutmonda Esperantista Kuracista Asocio* and a medical periodical, *La Kuracisto*, the publication of which latter has been interrupted by the war.

With the death of Dr. Zamenhof passes away another of the great physicians. Perhaps in later years the nations will gather together in amicable congress and discuss international differences in Esperanto. Perhaps we shall see a United States of the World who shall speak this language, and only delve into English, French and German as our college youths do now into Latin, Hebrew and Greek. When this millennium arrives the name of Zamenhof may well be canonized. It is but one instance more of the love of humanity inherent in the medical profession, one more case where, in addition to his daily relief of individual suffering, the physician has occupied himself with a task looking to the greatest good of all.

THE MASSACHUSETTS MEDICAL SOCIETY.

IN another column of the present issue of the JOURNAL is published, according to custom, the program of the annual meeting of the Massachusetts Medical Society, at which, next week, will be observed its one hundred and thirty-sixth anniversary. The Society assembles this year under unusual conditions. Not since the Civil War have so many of its members been absent on service for their country. The regular exercises and routine of the meeting will be carried out; but the shadow of the great war will be over the minds of all. The names of those who are absent on service, it will be observed, are denoted on the program by asterisks. It is the heartfelt hope of all that none of these

may prove prophetic, and that, by another season, all those who bear them may have returned to us in safety, not for many years to become *stelligeri*.

MEDICAL NOTES.

MANUFACTURE OF AMERICAN SALVARSAN.—There is a great deal of interest now being manifested in Congress regarding the abrogation of the patents on salvarsan. It is most desirable to declare them void or to enact such legislation as would relieve the situation permanently and not simply during the period of the war.

The patents on salvarsan are held by a German firm. The price is \$4.50 per dose of 6 decigrams. If American chemists were permitted to make it, the drug could be sold after a short time for 50 cents or less.

Physicians should write to all of the Congressmen and Senators from their State and urge them to take some action.

J. M. T. FINNEY,
GEORGE WALKER.

PREVALENCE OF MENINGITIS.—The current prevalence of epidemic cerebrospinal meningitis in the United States is noted in the weekly report of the Public Health Service for May 11, 1917. From March 1 to May 8, the total number of cases reported in those states where the disease is extensively present, is as follows: Pennsylvania, 284; Minnesota, 169; Connecticut, 148; New York, 123; Ohio, 79; Illinois, 73; Kansas, 40; Wisconsin, 36; and Massachusetts, 30.

HOSPITAL BEQUEST.—By the will of the late James C. Stodder, for some time a resident of Boston, the Eastern Maine General Hospital is left one-sixth of the estate above the sum of \$50,000, which is left to relatives.

HEALTH DEPARTMENT SCORES A VICTORY IN COURT.—The New York Disposal Corporation, operator of the garbage disposal plant on Barren Island, was convicted in the Court of Special Sessions, Borough of Brooklyn, on Monday, May 14, 1917, for a violation of Section 212 of the Sanitary Code, which prohibits the escape and discharge of offensive or noxious odors from any building, vessel, or place in the city of New York, to the detriment and annoyance of any person or persons not being therein or thereupon engaged.

The action was instituted by the Department of Health as the result of complaints of citizens residing in the Borough of Queens, supplemented by observations and evidence obtained by Inspectors of the Department of Health covering a period of several months. The plant

was operated for the purpose of disposing of the city's garbage and waste material under contract with the city authorities. Through careless and negligent operation, offensive and noxious odors were discharged, and these contaminated the air to such an extent that the residents of the Borough of Queens, particularly the Rockaway Peninsula, were seriously inconvenienced and annoyed. Evidence was submitted to the court to show that the defendant corporation was guilty of maintaining a public nuisance. The court found the defendant guilty and imposed a fine of one hundred dollars. This is the first successful prosecution of the operator of the garbage plant on Barren Island.

LONDON DEATH RATES IN MARCH.—Statistics recently published show that the total death rate of London in March was 18.2 per thousand inhabitants living. Among the several districts and boroughs, the highest rate was 23.6 in Bermondsey, a crowded southern slum, and the lowest was 11.8, in Hampstead, an open suburb on the north.

ST. MARY'S HOSPITAL, ROCHESTER, MINN.—The twenty-seventh annual report of St. Mary's Hospital, Rochester, Minn., records a total number of patients for the year 1916 of 8,750. The total number of operations performed was 10,209. The death rate was 1.9%. The death rate for abdominal operations was 2.4%, and the total number of abdominal operations was 5345.

WAR NOTES.

AMBULANCE UNITS.—To meet the urgent need of facilities to care for the wounded abroad, the Government is organizing one hundred and twenty ambulance companies throughout the country. These will include 18,000 enlisted men who will be sent to concentration camps, to be designated later, and put through a course of training. It is understood that the only channels through which these men can be raised are the physicians who are recruiting the ambulance and field hospital companies. Officers will probably be chosen from among the 18,000 recruited. Surgeon-General Gorgas has the matter in charge and will designate the concentration camps and other details later. Mechanics, chauffeurs, farriers, and other workmen are desired, as well as men who have had experience in hospital and orderly work.

GIFTS OF ROCKEFELLER FOUNDATION.—There was announced at a meeting of the board of directors of the Rockefeller Foundation a new donation from John D. Rockefeller of \$25,000,000. The resources, therefore, of the Foundation amount to \$125,765,000. Seventy thousand

dollars was appropriated for the maintenance of the school for hygiene and public health of Johns Hopkins University during its first fiscal year, to start July 1. The Foundation has already contributed \$167,000 towards the building of the school, which is practically complete. Twenty-five thousand dollars was appropriated toward a total outlay of \$160,000 for the financing of a mobile motor hospital unit on the Italian plan, to be operated by the medical school of Yale University for experimental use in France. An amount, at present beyond estimation, because of the uncertainty existing regarding the duration of the war, will be spent giving aid to the Allies, especially France.

AID OF THE ROCKEFELLER FOUNDATION TO FRANCE.—The Rockefeller Foundation has appointed Dr. Livingston Farrand, president of the University of Colorado, and well known as an authority on tuberculosis, to go to France and undertake a campaign against tuberculosis.

"It is expected that the work which at present is being done for tuberculous soldiers will be extended to include a comprehensive plan looking to the control of tuberculosis throughout France. The work will be carried on under the supervision of a French central committee and local committees which are being organized throughout provincial France. Aside from a small group of Americans who will be sent to France at an early date, the personnel of the organization will be French."

Dr. Farrand, formerly for many years secretary of the National Association for the Study and Prevention of Tuberculosis, with one or two assistants, expects to sail for France within the next few weeks.

ORGANIZATION OF NEW ENGLAND UNITS.—Seven ambulance and seven field hospital companies will be recruited in the Northeastern Division and Major James F. Hall, M.C., assistant to the department surgeon of this district, has been ordered to organize the companies. The work of raising the companies will be done by physicians. Dr. Charles R. Morgan of Boston, formerly in the Medical Corps of the Massachusetts National Guard, has agreed to raise a field hospital company. He will be given command of the company with the rank of major in the medical section of the Officers' Reserve Corps. The maximum authorized strength of an ambulance company is 180 men and that of a field hospital company, 80 men. The former is commanded by a captain, who has four other officers, either captains or lieutenants, under him. The latter is commanded by a major, who has five officers, either captains or lieutenants. Men with training in hospital work or as drug clerks, or with similar experience along medical lines, are especially desired and will be given rank as non-commissioned officers. The Northeastern Department is authorized to re-

cruit 2736 privates, 1st class, while the number of other privates is unlimited. Those secured in excess of the required number for each company will be detailed to the Medical Corps.

The physicians thus far selected, who will probably command the companies they raise, with the ranks of captain for the ambulance commands and majors for hospitals, are: Hospital companies, Dr. Charles R. Morgan, Dr. Henry C. Marble, Dr. Dana Drury, Boston; Dr. George Osgood, Cohasset, Mass.; Maj. Bial F. Bradbury, Togus, Me.; Dr. Howard W. Beal, Worcester; Dr. Otto Wiedman, Hartford, Ct.; Dr. Edmund Russell, Waterbury, Ct.; Dr. H. R. Giddings, Boston; ambulance companies, Dr. Howard DeF. Lockwood, Meriden, Ct.; Dr. William E. Hamlin, Waltham.

"Men belonging to these organizations are intended for service in France as soon as they have become properly trained. There are opportunities for druggists, chauffeurs, hospital orderlies, clerks, stable men, mechanics, cooks and drivers. Those with previous experience as orderlies in hospitals are particularly desired. The rates of pay as recently authorized by Congress are as follows: First enlistment, master hospital sergeant, \$81; hospital sergeant, \$71; sergeant, first-class, \$56; sergeant, \$44; corporal, \$42; cook, \$38; horseshoer, \$38; saddler, \$33; mechanic, \$33; farrier, \$33; private, first-class, \$33; private, \$30.

"A limited number of men who possess the necessary educational qualifications and who have a knowledge of pharmacy are eligible to be enlisted in the grades of non-commissioned officers up to and including sergeant, first-class, which carry increased pay and increased responsibilities, upon the approval of the commanding general, northeastern department."

NEEDS OF FRENCH MEDICAL STAFF.—H. H. Harjes of Morgan, Harjes and Company, has cabled to the American Red Cross some of the most pressing needs of the French medical establishments. Most earnestly desired are fifty ambulance sections, each consisting of twenty-three Ford cars and two White trucks and men to drive them; five Red Cross trains with staffs of doctors and nurses; 200 trucks; 300 two-wheeled horse carriages, 1000 rubber-tired wheelbarrows for carrying stretchers. The French need 3000 tents.

Besides drugs which are specified a request is made for from 40,000 to 100,000 cases of condensed milk, 200,000 blankets, 30,000 woolen pea jackets, 30,000 pairs of woolen trousers, 400,000 pairs of woolen socks, 20,000 pairs of leather slippers.

Mr. Harjes' cable gives also many other needs, such as quantities of oil cloth, waterproofed cloth, cocoanut mats, eating utensils, linoleum and surgical gloves. The French would like 5000 nurses, either men or women, but not less than 1000 men and, if possible,

5000 men as stretcher-bearers and workers in the hospitals—not to speak of 10 complete staffs of doctors, assistants and nurses.

RAISING OF IMMENSE FUND FOR RED CROSS.—The new Red Cross War Council, of which Henry P. Davison is head, held its first conference on May 24, and made plans for raising a fund of \$100,000,000. The fund is to be used not only for Red Cross relief for Americans, but also for the destitute in the foreign war zones, whatever their nationality. Ian Malcolm of the British Official Mission addressed the conference on the needs abroad; Frederick Walcott, a member of the Rockefeller Commission recently returned from Poland, spoke of Polish needs; and John H. Gade of the Belgian Relief Commission, told of the needs of Belgium.

The actual machinery of the great money-raising campaign, according to announced plans, will be in the hands of Charles S. Ward, International Young Men's Christian Association secretary, who also is secretary of the War Finance Committee. The campaign in New York City will be directly in charge of Cornelius N. Bliss, Jr. The meetings are being presided over by Seward Prosser of New York.

Former President Taft conferred with representatives of the various Red Cross chapters. Herbert C. Hoover presented recommendations for the rehabilitation of Northern France.

Mr. Davison explained that the \$100,000,000 to be raised was a beginning in an intensive campaign in which committees of prominent business men are to be chosen in each city. The work will be carried on with all possible vigor, so that American assistance to the devastated districts of Europe may be offered at once. Mr. Davison also explained the plan in detail today to members of the finance committee of the Red Cross, including B. T. Stotesbury of Philadelphia, F. L. Higginson of Boston, and Julius Rosenwald of Chicago.

TRAINING CAMPS FOR MEDICAL OFFICERS.—It is announced that new army medical schools will be established at Fort Riley, Kansas; Fort Benjamin Harrison, Ind.; Fort Oglethorpe, Ga.; and possibly other places where the thousands of doctors who will be needed when the armies shall be mobilized, may be trained. The camps will occupy the same relation to the medical section that Plattsburg and other camps occupy to the line service. Members of the medical section of the Officers' Reserve Corps, which numbers about two thousand, will be ordered to attend. About five thousand doctors are needed now, and probably the services of ten thousand more will be needed by the end of the year.

Three new divisions of the Army Medical Corps have been created. They are the divisions of sanitary inspection, under Col. Frederick P. Reynolds; the division of hospitals and hospital construction, under Col. James B.

Clennan, and the division of medical military instruction, under Col. Edward L. Munson, all three divisions being under the general supervision of Col. Henry R. Birmingham.

Each of these camps will accommodate 600 doctors, and the three in Kansas, Georgia and Indiana will be ready June 1. The first four weeks will be devoted to instructing the doctors as to duties of enlisted men of the hospital service, the second month to medical officers' courses, and the third to field work, which can be omitted if the emergency requires. The doctors must, in turn, train 50,000 enlisted men in hospital work.

The first 1800 doctors will come from the Medical Reserve Corps and the National Guard. An ambulance company and field hospital will be established at each camp, and later special schools for enlisted men of the Hospital Corps will be added.

The hospital division of the Medical Corps is working out plans for the 32 divisional hospitals, one to be established at each of the divisional training camps for the new armies. Each of these will be able to care for 1000 patients, and in addition a number of clearing hospitals for more serious cases and receiving hospitals at coast points also will be established.

RECEPTION IN ENGLAND OF BASE HOSPITAL No. 4.—Base Hospital No. 4, made up of physicians and nurses from Cleveland, Ohio, were accorded a warm welcome on their arrival in England. About twenty-five physicians and sixty nurses were received by the King and Queen in Buckingham Palace. The simple but impressive ceremony took place on a terrace facing the gardens of the palace. A canopy had been erected over the terrace, and on the grounds in front of this the American detachment was drawn up at attention before the arrival of the King and Queen. After the members of the corps had taken their positions, the members of the royal family stepped from the palace and stood on the terrace, surrounded by a group including the American ambassador, Mrs. Page, and nearly all the members of the royal household. The King stepped forward, received and returned a salute, and spoke as follows:

"It is with the utmost pleasure and satisfaction that the Queen and I welcome you here today," he said. "We greet you as the first detachment of the American Army which has landed on our shores since your great republic resolved to join in the world struggle for the ideals of civilization.

"We deeply appreciate this prompt and generous response to our needs. It is characteristic of the humanity and chivalry which have ever been evinced by the American nation that the first assistance rendered the Allies is in connection with the profession of healing and the work of mercy."

When he had concluded, the King, the Queen

and Princess Mary descended the steps, and the surgeons and nurses were presented.

DENTAL RESERVE CORPS.—At the classes held at the Forsyth Infirmary for the training of dental surgeons, more than 450 dentists presented applications. The course has, therefore, been divided into three one-week periods. Harold de W. Cross, D.M.D., is director of the course, which includes military dental and oral practice under the instruction of an army dental surgeon.

MEDICAL GRADUATES IN GERMANY.—In the German academic year 1912-13, 1447 licenses to practise medicine were granted. In the year 1913-14, owing to the premature graduation of many medical students at the outbreak of the war, the number of licenses rose to 3822, but in 1914-15 it fell to 1038. In 1913-14 the number of women licensed to practise medicine was 148, in 1914-15 it was 172. In 1908-09 the number of women medical students in Germany was 334; in 1915-16 it was 1229.

ORTHOPEDIC WORKSHOPS IN GERMANY.—An article by Dr. Blind of Strassburg, in the *Medizinische Klinik* (No. 21, 1916) describes the establishment throughout Germany of curative workshops in conjunction with orthopedic hospitals for the rehabilitation and employment of crippled soldiers. "In his own hospital he has added to the medico-mechanical department a workshop, so that surgical and orthopedic treatment may be combined with work for the body and mind. He had set his face against the output of gimcracks, such as glasses plastered over with cigar wrappers and ash trays of gilded glass; the task he first set men with crippled fingers was basket plaiting, but, as he foresaw that an army of crippled basket makers would find an insufficient market for their wares after the war, he gave them other tasks as they became more nimble, with the result that his patients provided their own splints, artificial limbs, and even metal operating tables."

PROGRESS OF PARKER HILL HOSPITAL.—The construction of a hospital on Parker Hill, Boston, for the care of soldiers wounded in limbs and joints, is progressing. While the Hospital will be under Government auspices, funds are desired from private sources to insure the greatest efficiency of the project. Contributions may be sent to Charles S. Rackemann, Ames Building, Boston, treasurer of the fund. This is one of the two base orthopedic hospitals in the country, the other being at Washington, D. C.

BASE HOSPITAL No. 1.—Red Cross Unit No. 12, since its departure for France, is known as Base Hospital No. 1. It left Chicago on May 16, and is composed of two hundred forty-seven

persons, of whom twenty-four were physicians, sixty-five were nurses and one hundred fifty-three were enlisted men. Dr. Fred A. Besley is director of the unit. Many of the men were students at Northwestern University and the University of Chicago.

DEATH OF TWO NURSES.—By an extraordinary and deplorable accident, two nurses of the Red Cross unit known as Base Hospital No. 1, bound for France, were killed by the firing of one of the guns on the ship carrying them to Europe. A brass cup which fits over the brass shell containing the powder, when the charge was exploded, flew back to the ship in boomerang fashion, hitting the stanchion where three nurses were sitting. The flying pieces of the stanchion instantly killed Mrs. Edith Ayres and Miss Helen Burnett Wood, and wounded Miss Emma Matzen. The ship returned to port with the bodies of the nurses. This manner of sealing the cartridge cases of the powder charges has been used in the navy for many years, and the possibility of such an accident had never been conceived.

ARRIVAL OF RED CROSS HOSPITAL No. 5.—The safe arrival of Red Cross Hospital No. 5, in England, was announced on May 22. This unit was sent from Boston under the command of Maj. Robert U. Patterson of the army medical corps, with Dr. Harvey Cushing as director.

DENTISTS' SERVICES COMPLETED.—The task of putting in order the teeth of the State troops since mobilization was begun, which was undertaken by volunteer dentists working in clinics and in their private offices, is practically completed. Since the first call for soldiers came, the dentists have examined 3400 soldiers' mouths and have performed about 15,000 operations. From the dental examinations made for the soldiers, it developed that 75% of all the soldiers now in military service in Massachusetts required dental services.

WAR RELIEF FUNDS.—On June 1 the totals of the principal New England war relief funds reached the following amounts:

Belgian Fund	\$609,975.28
French Wounded Fund ..	230,069.99
French Orphanage Fund ..	100,362.23
Surgical Dressings Fund ..	94,703.97
Edith Cavell Fund	2,400.00
French Musicians' Fund ..	1,419.92
French War Dogs' Fund ..	354.25

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending June 2, the number of deaths reported was 271 against 239 for the same period last year, with a rate of 18.30 against 16.39 last

year. There were 42 deaths under one year of age against 35 last year, and 85 deaths over 60 years of age against 74 last year.

The number of cases of principal reportable diseases were: diphtheria, 74; scarlet fever, 23; measles, 238; whooping cough, 12; typhoid fever, 6; tuberculosis 35.

Included in the above were the following cases of non-residents: diphtheria, 13; scarlet fever, 2; tuberculosis, 3.

Total deaths from those diseases were: diphtheria, 7; whooping cough, 2; typhoid fever, 1; measles, 3; tuberculosis, 17.

Included in the above were the following deaths of non-residents: diphtheria, 1.

HOSPITAL BEQUEST.—By the will of the late George W. Moses of Brookline, the Boston Floating Hospital is the recipient of the sum of \$500.

GRADUATION OF NURSES AT FENWAY HOSPITAL.—The graduation exercises of the training class at Fenway Hospital was held on May 22. There were seven graduates. Dr. James T. Hepburn presented diplomas and Drs. Roy H. Gilpatrick, C. C. Carroll, William E. Preble, John D. Adams, Harry W. Goodall and Nathaniel R. Mason made addresses.

INCREASED MEMBERSHIP IN RED CROSS.—The Boston Metropolitan Chapter, American Red Cross, is desirous of raising its membership to fifty thousand. It already has over 40,000, and efforts are being made through local committees to conduct successful campaigns for new members in the suburbs.

NEW WINCHESTER HOSPITAL.—A new hospital, built by the Winchester Visiting Nurse Association, is opened in Winchester. Provision is made for fifty beds, two five-bed wards, six two-bed wards, eight private rooms, four free beds, and a children's ward and nursery, with a maternity department complete in every detail. The nurses' home, a gift from the Andrew C. Slater estate, contains twenty-five rooms. At the opening of the hospital there will be on duty a staff of twelve nurses under the superintendent, Miss Annie Gillett. Patients will be attended at the hospital by physicians of their own choice.

MALDEN HOSPITAL TRAINING SCHOOL.—A class of nurses was graduated recently from the Malden Hospital Training School. At the exercises Professor Anne H. Strong of Simmons College and Dr. Robert H. French of Malden, made addresses.

Obituaries.

CHRISTOPHER SEYMOUR, M.D.

CHRISTOPHER SEYMOUR, M.D., died at his home in Northampton, Mass., of heart disease, May 19, 1917, aged 74 years. He was born in Hinsdale, Mass., and was educated at the University of Michigan Medical School, where he took his degree in 1869. He settled in practice that year in Northampton, joining the Massachusetts Medical Society, and had practised there since, being retired in 1908.

An important work undertaken by Dr. Seymour, aside from his practice, was the development of the Cooley Dickinson Hospital, which was largely under his direction for many years, while he was president of the board of trustees. The erection of the present commodious and modern building was chiefly due to his vision of the large future for the institution, and his courage and energy in advancing the enterprise.

Dr. Seymour was for 30 years medical examiner for Hampshire County, and was a member of the Hampshire District Medical Society.

He is survived by two daughters, Miss Mary H. Seymour of Northampton and Mrs. Fannie Hulse, wife of Rev. Hiram R. Hulse, Episcopal Bishop of Cuba.

HENRY PINCKNEY FROST, M.D.

HENRY PINCKNEY FROST, M.D., Superintendent of the Boston State Hospital, Dorchester, died at the Massachusetts General Hospital May 23, 1917, of pneumonia, aged 48 years. The son of Henry and Sabra J. Walker Frost, he was born in Charleston, S. C., and was graduated from the Maryland University School of Medicine in 1889. After serving as house officer at the city institution at Ward's Island, New York, he was assistant superintendent at the Willard State Hospital for the Insane, at Willard, N. Y., and occupied a similar position at the Buffalo State Hospital for thirteen years. He became superintendent of the State Hospital in Dorchester in 1909. Dr. Frost was a member of the American Medical Association, the American Neurological Association, American Society of Psychiatry, New England Society of Psychiatry and Neurology, and the Massachusetts Medical Society. He is survived by his widow, who was Miss Margaret Johnson of Virginia, and by three children.

United States Senator Harry Lane, M.D., of Oregon, died at San Francisco on May 25. He was a native of Oregon and was born in 1855. In 1876 he graduated from Willamette University, at Salem, Oregon, and became a practising physician at Portland. He entered the senate in 1913.

The Massachusetts Medical Society.

PROGRAM OF THE ONE HUNDRED AND THIRTY-SIXTH ANNIVERSARY.

The one hundred and thirty-sixth anniversary of the Massachusetts Medical Society will be observed on Tuesday and Wednesday of next week, June 12 and 13, in Boston. Following is the entire body of the program of exercises on both days:

GENERAL INFORMATION.

A BUREAU OF INFORMATION will be maintained by the Committee of Arrangements during Tuesday and Wednesday in the lobby of the Copley-Plaza Hotel, the headquarters of the Society during the Annual Meeting.

ALL FELLOWS ARE REQUESTED TO REGISTER and procure their dinner tickets as early as possible at the Bureau of Information.

THE ANNUAL DINNER AND ALL GENERAL AND SECTION MEETINGS will be held at the Copley-Plaza Hotel. During both days of the meeting the facilities of the hotel will be at the disposal of the members of the Society, and parking space for automobiles, with supervision, will be provided.

FELLOWS of the Society desiring to spend Tuesday or Wednesday night in Boston can secure rooms by communicating in advance, either with the chairman of the Committee of Arrangements or directly with the hotel.

The Boston Medical Library, 8 The Fenway, will be open for the inspection and use of the Fellows during the days of the meetings.

The Harvard Medical School, 240 Longwood Avenue, and the Tufts College Medical School, 416 Huntington Avenue, will be open for inspection by the Fellows both Tuesday and Wednesday.

JUNE 12, 1917.

TUESDAY MORNING.

There will be clinics and operations on the surgical services, and ward visits on the medical services, at the following hospitals:

MASSACHUSETTS GENERAL HOSPITAL.
BIGELOW SURGICAL AMPHITHEATRE.
10.00 A.M. TO 11.30 A.M.

1. Food Idiosyncrasies.—Dr. F. B. Talbot.
2. The Relation of Foreign Proteins to Asthma.—Dr. F. M. Rackemann.
3. Diabetes.—Dr. F. G. Brigham.
4. Pulmonary Abscess.—Dr. F. T. Lord.
5. The Value of Roentgen Rays in Diagnosis of Lesions of the Heart and Aorta.—Dr. G. W. Holmes.
6. Chronic Abdominal Pain; Study of 307 Cases.—Dr. W. H. Smith.
7. A Group of Cases.—Dr. D. L. Edsall.
8. Psoriasis.—Dr. H. P. Towle.
9. Madura Foot.—Dr. C. A. Porter.
10. Lillenthal's Operation for Acute Empyema.—Dr. C. C. Simmons.

11.30 A.M.

OPERATIONS BY THE STAFF.

AT THE BOSTON CITY HOSPITAL.—Operative clinics in the Surgical Amphitheatre and in the Gynecological Operating Room at 10 o'clock a.m., and visits and exhibition of cases in the Medical Wards at 10 o'clock a.m.

AT THE PETER BENT BRIGHAM HOSPITAL.—Operations in the Surgical Building, 9 to 12.30. Demonstrations in the Main Amphitheatre by members of the Medical and Surgical Staff, 11 to 2.30.

AT THE CARNEY HOSPITAL.—A Surgical, a Gynecological and an Orthopedic Clinic in the operating rooms. The Medical Service will make a ward visit.

AT THE CHILDREN'S HOSPITAL.—Dr. John Lovett Morse, A Visit in the Medical Wards, 9.30 to 10.30. Dr. Robert W. Lovett, Demonstration of Examination and Methods of Treatment in the Infantile Paralysis Clinic, O. P. D., 10.30 to 11.30. Dr. James S. Stone, Surgical Clinic, Amphitheatre, 11.30 to 12.30.

AT THE INFANTS' HOSPITAL.—A ward visit by members of the Staff at 10.30 a.m.

AT THE BOSTON LYING-IN HOSPITAL.—Drs. Huntington and Swift, Demonstration and Methods of Prenatal Care, 10.30 a.m. Dr. Foster Kellogg, Demonstration of Anesthetic Examination of Border Line Pelves, 10.30 a.m. Drs. Torbert and Kellogg, Ward Visit and Operations as Offered by Material in Hospital at Time, 10.30 a.m. Miss Harrington, Supt. of Nurses, Demonstration of Breast Binder, 11 a.m.

AT THE ROBERT B. BRIGHAM HOSPITAL.—Clinics will be held and demonstrations given.

AT THE FREE HOSPITAL FOR WOMEN, BROOKLINE. Operations by Dr. W. P. Graves: Plastic and Coeliotomy for Retroversion, 7.30 a.m.; Hysterectomy for Fibroid, 8.15 a.m.; Amputation of Cervix and Coeliotomy for Prolapsed, 9 a.m.; Plastic for Repair of Complete Laceration of Perineum, 10.00 a.m. By Dr. R. G. Wadsworth: Plastic and Coeliotomy for Retroversion, 7.30 a.m. By Dr. F. A. Pemberton: Hysterectomy for Fibroid, 9 a.m.; Plastic and Coeliotomy for Retroversion, 10 a.m.; Plastic and Coeliotomy for Prolapse, 11 a.m.

ANNUAL MEETING OF THE SUPERVISORS.
FOYER, COPLEY-PLAZA HOTEL.
11.30 O'CLOCK.

TUESDAY NOON.
ANNUAL MEETING OF THE COUNCIL.
FOYER, COPLEY-PLAZA HOTEL.

* The men whose names are marked with an asterisk have been called away in the service of the country since the program was arranged.

TUESDAY AFTERNOON.
MEETING OF THE SECTION OF MEDICINE.
FOYER, COPLEY-PLAZA HOTEL.
2.30 O'CLOCK.

Officers of the Section of Medicine:

DR. BRACE W. PADDOCK, Pittsfield, *Chairman*.
* DR. JAMES H. MEANS, Boston, *Secretary*.

SYMPOSIUM ON ELECTROCARDIOGRAPHY.

1. The Electro-cardiogram in Normal Health.—Dr. Horatio B. Williams, New York.
2. The Clinical Significance of Changes in the Individual Electro-cardiogram.—* Dr. Paul D. White, Boston.
3. Some Clinical Features of Auricular Fibrillation.—Dr. Henry A. Christian, Boston.
4. The Nature of Certain Changes Observed in the Electro-cardiogram.—Dr. Alfred E. Cohn, New York.
5. Acute Carditis.—Dr. Frank T. Fulton, Providence, R. I.
Discussion by Dr. Samuel A. Levine, New York; Dr. M. A. Welbourn, Boston.
6. The Treatment of Pernicious Anemia.—Drs. George R. Minot, Boston; * Roger I. Lee, Cambridge.
Discussion by * Dr. Beth Vincent, Dr. R. C. Larabee, Dr. J. B. Blake, Dr. D. A. Haller, Boston.

TUESDAY AFTERNOON.
MEETING OF THE SECTION OF SURGERY.
SALON, COPLEY-PLAZA HOTEL.
2.30 O'CLOCK.

Officers of the Section of Surgery.

DR. FREDERIC J. COTTON, Boston, *Chairman*.
DR. ALBERT EHRENFRIED, Boston, *Secretary*.

1. The Modern Treatment of Burns, with Special Reference to Ambrine.—Dr. E. H. Risley, Boston.

- Discussion by Dr. J. B. Blake, Boston; Dr. J. M. Birnie, Springfield.
2. Transplantation of the Head in Old Cases of Fracture of the Neck of the Femur. (Illustrated.) Dr. E. G. Brackett, Boston.
Discussion by Dr. C. L. Scudder, Boston; * Dr. William Darrach, New York.
 3. Spina Bifida and Allied Malformations, Based on a Study of 32 Personal Cases. (Illustrated.)—Dr. T. W. Harner, Boston.
Discussion by Dr. J. J. Thomas, Dr. J. S. Stone, Boston.
 4. Report of Results of Radium Treatment at the Huntington Hospital, by the Cancer Commission of Harvard University.—Dr. R. B. Greenough, Boston.
 5. Mesothorium and Combination Methods in the Treatment of Cancer.—Dr. F. D. Donoghue, Boston.
Discussion of the Treatment of Cancer by Dr. Thomas Ordway, Albany, N. Y.; Dr. Edward Reynolds, Boston.
 6. The Roentgen Diagnosis of the Pathological Gall-bladder. (Illustrated.)—Dr. A. W. George, Dr. R. D. Leonard, Boston.
Discussion by Dr. G. C. Smith, Dr. C. C. Carroll, Boston.

TUESDAY AFTERNOON.

MEETING OF THE SECTION OF TUBERCULOSIS.
BALLROOM, COPELY-PLAZA HOTEL.
2.30 O'CLOCK.

Officers of the Section of Tuberculosis:

DR. WALTER G. PHILPPE, Salem, *Chairman*.
DR. JOHN B. HAWES, 2d, Boston, *Secretary*.

SYMPOSIUM ON THE DIAGNOSIS OF TUBERCULOSIS.

1. Under What Conditions is the Diagnosis of Pulmonary Tuberculosis Without a Positive Sputum Justified?—Dr. David R. Lyman, New Haven, Connecticut State Tuberculosis Commission, Superintendent of the Gaylord Farm Sanatorium.
2. Under What Conditions is the Diagnosis of Pulmonary Tuberculosis in Children Justified?—Dr. H. D. Chadwick, Westfield, Superintendent of the Westfield State Sanatorium.
3. What Constitutes Reportable Tuberculosis?—Dr. Francis G. Curtis, Chestnut Hill, Chairman of the Board of Health of Newton.
4. Minimum Diagnostic Standards in the Diagnosis of Pulmonary Tuberculosis.—Dr. John B. Hawes, 2d, Boston.
Discussion by Dr. W. Irving Clark, Worcester; Dr. Ralph B. Ober, Springfield; Dr. Arthur N. Broughton, Boston; Dr. William W. Walcott, Natick; Dr. Ralph E. Stone, Beverly; Dr. James H. Young, Newton; Dr. John F. O'Brien, Boston; Dr. Charles E. Prior, Malden; Dr. George H. Thompson, North Adams.

TUESDAY AFTERNOON.

MEETING OF THE SECTION OF HOSPITAL ADMINISTRATION.
STATE DINING ROOM, COPELY-PLAZA HOTEL.
2.30 O'CLOCK.

Officers of the Section of Hospital Administration:

DR. HOMER GAGE, Worcester, *Chairman*.
DR. JOSEPH B. HOWLAND, Boston, *Secretary*.

1. The Hospital Follow-up System.—Dr. Channing C. Simmons, Boston.
2. Uniformity in Hospital Reports.—Dr. Ernest A. Codman, Boston.
3. The Standardization of Hospitals.—Mr. John G. Bowman, Director, American College of Surgeons, Chicago.
4. Efficiency Tests Applied to the Attending and House Physicians of the Cook County Hospital.—Dr. Joseph A. Capps, Chicago.

TUESDAY EVENING.

THE SHATTUCK LECTURE.

FOYER, COPELY-PLAZA HOTEL.
8 O'CLOCK.

By *DR. WALTER B. CANNON, George Higginson Professor of Physiology, Harvard Medical School.
Subject: The Physiological Factors Concerned in Surgical Shock. (In the absence of Dr. Cannon the lecture will be read by Dr. David Cheever.)
After the lecture there will be a reception to the President by the Society, followed by music and refreshments.

JUNE 13, 1917.

WEDNESDAY MORNING.

ONE HUNDRED AND THIRTY-SIXTH ANNIVERSARY.
FOYER, COPELY-PLAZA HOTEL.
9.30 O'CLOCK.

Business of the Annual Meeting.

PROPOSED AMENDMENTS TO THE BY-LAWS THAT HAVE BEEN SUBMITTED TO THE COUNCIL IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER IX.

1. By the Board of Supervisors, October 4, 1916. To Chapter V.

Page 17, Section 1 (*Board of Supervisors*) line 7, to follow the word "board," this sentence: He shall call special meetings at the request of five supervisors.

Same page, same section, third paragraph (*Diplomas of colleges not on list*), add at end of paragraph, deleting the period, the following: by the district secretary before an applicant is permitted to take an examination.

Same page, same section, last paragraph (*Examinations; when held*) second line, delete "at 2.00 p.m."; also next line, change the word "second" to "first" in the two places where it occurs.

Page 18, Section 2 (*How applications are made*) first line, substitute the word "fellowship" for the word "examination."

Same line, after the word "apply," insert the following: on blanks furnished for the purpose. . .

Same section, end of second line, delete the semicolon and add the following: at least one week before the date of a given examination.

Same page, Section 3 (*Duties of district secretaries*), second line, to follow the word "censors," add the following: shall furnish applicants with blanks adopted by the board of supervisors; they. . .

2. By the Committee on Membership and Finance, February 7, 1917. To Chapter VI.

That the fourth paragraph of Chapter VI, Section 4, page 21, be amended so that it shall read:

He shall attend the meetings of the Committee on Membership and Finance, furnish the committee with such data on membership and finance as the committee may require, and shall make all investments and re-investments of the Society's funds subject to the approval of this committee.

The papers will be devoted to "Certain Aspects of the Hazards of Industry."

1. The Bearings of Industry on Medical Practice.—Dr. David L. Edsall, Boston.
2. The Activities of a Labor Department.—Mr. Edwin Mulready, Rockland, Commissioner of Labor, the Commonwealth of Massachusetts.
3. The Adjustment of Physical Defectives to Employment.—Dr. W. Irving Clark, Worcester.
4. The Industrial Clinic, Massachusetts General Hospital.—Dr. Wade S. Wright, Boston.
5. The Establishment of a First-aid Hospital in Industry.—Dr. Herbert J. Cronin, Cambridge.

WEDNESDAY NOON.

THE ANNUAL DISCOURSE WILL BE DELIVERED BY
DR. PHILEMON E. TRUESDALE, FALL RIVER.

WEDNESDAY AFTERNOON.

COMBINED MEETING OF THE SECTIONS OF MEDICINE AND SURGERY.

SALON, COPLEY-PLAZA HOTEL.
2.30 O'CLOCK.

Chairmen: DR. FREDERIC J. COTTON, Boston; DR. BRACE W. PADDOCK, Pittsfield.

Secretaries: DR. ALBERT EHRENFRIED, Boston; *DR. JAMES H. MEANS, Boston.

1. Neurological Indications for and against Operation in Traumatic Injuries Affecting the Central Nervous System.—Dr. J. J. Thomas, Boston.
Discussion by Dr. P. C. Knapp, Dr. J. T. Bottomley, Boston.
2. Indications for Operation in Skull Fractures.—Dr. E. H. Nichols, Boston.
Discussion by Dr. W. E. Paul, *Dr. Harvey Cushing, Boston.
3. Temperature as a Valuable Guide to Operation in Skull Fracture.—Dr. J. W. Courtney, Boston.
4. Indications for Laminectomy in Fracture of the Spine with Cord Symptoms.—Dr. J. B. Hartwell, Boston.
Discussion by Dr. I. H. Coriat, Dr. Samuel J. Mixer, Boston.
5. A Study of Fractures of the Base of the Skull at the Massachusetts General Hospital.—*Dr. W. J. Mixer, Boston.
Discussion by *Dr. George Clymer, Dr. G. L. Walton, Boston.
6. A Brief Report of Cases of Fracture of the Skull and Spine, from the Fourth Surgical Service, Boston City Hospital.

WEDNESDAY EVENING.

7 O'CLOCK.

The ANNUAL DINNER will be served in the BALLROOM of the COPLEY PLAZA HOTEL, promptly at 7 o'clock. Dress suits not necessary.

Fellows desiring to sit together, in groups of not less than ten, may reserve tables seating ten by sending a postal to the Chairman of the Committee of Arrangements, stating the names of those for whom reservations are to be made. Such postals must be in the hands of the Chairman on or before June 6. No tables will be reserved for less than ten nor after June 6.

DINNER TICKETS.

Tickets for the Annual Dinner, at one dollar apiece, may be obtained at the Bureau of Information during the two days of the meeting by those Fellows whose current dues are paid.

Correspondence.

HAVERHILL PHYSICIANS' WAR SERVICE ASSOCIATION.

Haverhill, Mass., May 23, 1917.

Mr. Editor:—

The physicians of Haverhill, organizing under the name of the "Haverhill Physicians' War Service Association," elected Dr. John F. Croston as president; Dr. Duncan Macdougall as vice-president; Dr. Francis W. Anthony, recording and corresponding secretary; Dr. George M. Atwood, treasurer; Dr. I. J. Clarke chairman, Dr. A. P. George and Dr. A. M. Hubbell as a medical service committee; Dr. Alice G. Symonds, chairman, Dr. Harry B. Perkins, Dr. Blanche Cooney as a publicity committee; Drs. Croston, Macdougall, Anthony, Atwood, Clarke, Symonds, Crittenden as executive committee.

The following resolutions have been signed by a majority of the physicians of the city:

"We, the undersigned physicians of Haverhill and vicinity, desirous of aiding in every way our country in the present war, hereby agree that, in the event that any physician in our midst is rendering service that obliges him to leave his practice, we will care for that practice during his absence, place to his credit all fees collected, and turn back to him, upon his return, all families ordinarily employing him, to whom we have rendered professional service.

"In the event of active service in war by the members of local military organizations we, the physicians of Haverhill and vicinity, agree to treat without charge the dependents of those so engaged who have been in times of peace under our individual care."

Meetings have been held which have been addressed by physicians connected with the army and others. The organization was made in order that if services could be rendered to the state or country it might be done through organized channels.

Very truly yours,

FRANCIS W. ANTHONY, Corresponding Secretary.

APPOINTMENTS.

DR. WILLIAM G. MACCALLUM of Columbia University has accepted the chair of pathology and bacteriology at Johns Hopkins University.

DR. ADRIAN V. S. LAMBERT, associate professor of surgery at Columbia University, will act as head of the department, taking the place of Dr. George E. Brewer, who has been called for foreign service.

MARRIAGES.

The marriage of Miss Ida M. Buckley of Exeter, N. H., to Dr. Frank H. Cushman of Boston is announced. Dr. Cushman is a graduate of Harvard Dental School, and served for six months with the Harvard Surgical Unit in France.

ADDENDUM.

Following are the legends for the illustrations of Dr. Hektoen's paper, "Recent Investigations on the Bacteriology of Acute Poliomyelitis," published in the JOURNAL of May 17, 1917.

LEGENDS FOR ILLUSTRATIONS.

- FIG. 1.—Diplococcus and smaller coccil forms in spinal cord of poliomyelitis patient. Material dates from Norwegian epidemic about 1906, and was obtained from Professor F. Harbitz in Christiania. Gram's stain. X1200.
- FIG. 2.—Cocci, large and small, in smear of poliomyelitis brain (human) after preservation by Dr. Mather in glycerol for five months. Cultures still positive and pure. Gram's stain. X1200.
- FIG. 3.—Spinal cord of Monkey No. 2. For details see text. Cellular infiltration and neurophagocytosis. X150.
- FIG. 4.—Intervertebral ganglion, Monkey No. 2. For details see text. Small area of infiltration and destruction of nerve cells. X280.
- FIG. 5.—Cellular infiltration of spinal pia of rabbit injected intracerebrally with 0.5 c.c. suspension of blood agar culture of a coccus from poliomyelitis in its fourteenth generation on blood agar. Flaccid paralysis developed in right hind and both front legs on seventh day. Chloroformed. Cultures of cocci obtained from brain, cord and spinal fluid, but not from joints or heart blood. X16.
- FIG. 6.—From anterior horn of section illustrated in Fig. 5. Infiltration with mononuclear cells: satellitosis. X140.
- FIG. 7.—Perivascular infiltration in choroid plexus of a rabbit, details about which are given under Fig. 5. X160.
- FIG. 8.—From brain stem of rabbit injected intravenously with coccus from poliomyelitis in its seventh culture generation. No paralysis. Protound weakness 12 days later. Chloroformed. Cultures of coccus from brain and cord only. Invasion by cells, disorganization of nerve cells, satellitosis, extensive perivascular infiltration (Fig. 9). X250.
- FIG. 9.—Perivascular infiltration. For details see under Fig. 8. X225.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

June 14, 1917

THE MASSACHUSETTS MEDICAL SOCIETY

THE ANNUAL DISCOURSE—MILITARY MEDICINE: A MEANS TO PERPETUATE ITS TEACHING IN MASSACHUSETTS. By P. E. Truesdale, M.D., Fall River, Mass.....	825
--	-----

ORIGINAL ARTICLE

GASTRIC AND DUODENAL ULCERS. By J. S. Rodman, M.D., F.A.C.S., Philadelphia.....	834
DISCUSSION	838

ADDRESS

THE PRACTISING PHYSICIAN AND THE PUBLIC HEALTH. By Merrill E. Champion, M.D., C.P.H., Wollaston, Mass.....	840
--	-----

CLINICAL DEPARTMENT

REPORT OF A CASE OF CONGENITAL ANOMALY OF THE LARYNX. By George H. Powers, M.D., Boston.....	843
--	-----

MEDICAL PROGRESS

TWELFTH REPORT OF PROGRESS IN ORTHOPEDIC SURGERY. By M. S. Danforth, M.D., Robert Soutter, M.D., C. H. Bucholz, M.D., H. C. Low, M.D., R. B. Osgood, M.D., Boston.....	844
--	-----

EDITORIALS

RECONSTRUCTION BASE HOSPITAL No. 1.....	853
THE FOOD VALUE OF MEAT PREPARATIONS AND MEAT EXTRACTS.....	854
THE MASSACHUSETTS MEDICAL SOCIETY.....	855
MEDICAL NOTES.....	855

CORRESPONDENCE

THE BENEDICT TEST. F. Gorham Brigham.....	858
---	-----

MISCELLANY

NOTICES, RECENT DEATHS, ETC.....	858
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The Massachusetts Medical Society.

THE ANNUAL DISCOURSE.

NOTE.—At an adjourned meeting of the Massachusetts Medical Society held Oct. 3, 1890, it was

Resolved, "That The Massachusetts Medical Society hereby declares that it does not consider itself as having endorsed or censured the opinions in former published Annual Discourses, nor will it hold itself responsible for any opinions or sentiments advanced in any future similar discourses."

Resolved, "That the Committee on Publications be directed to print a statement to that effect at the commencement of each Annual Discourse which may hereafter be published."

MILITARY MEDICINE: A MEANS TO PERPETUATE ITS TEACHING IN MASSACHUSETTS.*

By P. E. TRUESDALE, M.D., FALL RIVER, MASS.

"We are no longer a young country, to be judged apart from the rest of the world," said Dr. E. H. Bradford, in his discourse before this Society in 1899. "We are to be measured by what is expected of us. This from a land of our resources would be the greatest gift to human welfare possible in human effort. The conflict of the next century," said he, "will be against ignorance, sorrow and suffering, and in this the medical profession must be foremost in strength and endeavor." In the light of our present position among nations these words embody the wisdom of a prophet.

We are all keenly interested and concerned in the part which we may exercise as individuals and practitioners in the present situation

which confronts our country. With that thought in view I wish to engage your attention upon the subject of Military Medicine and a Means to Perpetuate Its Teaching in Massachusetts. Already the whole science of medicine has been drawn into requisition, no less to prevent sickness and death of the soldiers in the camp, in the trenches and on the march, than to relieve and preserve them when wounded in battle. "It is not enough," said Mr. Chevalier in his Hunterian Oration in 1821, "that we advert to the benefits derived from surgery in the comparatively tranquil and measured course of civil life. We must not forget what it has accomplished in other and more turbulent scenes. We must turn to those seas and fields and mantling walls over which the thundering cannon has roared when fire and sword have met in awful conjunction to spur or to oppose unrelenting ambition. How many lives have been preserved, what solace and consolation have been afforded in the slow, gloomy hours of anguish by the firm and faithful hand which surgery has been enabled to stretch forth to the relief of the suffering brave."

Whenever the welfare or honor of our nation was to be maintained by battle, volunteer surgeons met the sacrifices in equal measure with other volunteer officers. The profession has never lagged in responding to the call of patriotism in the day of battle. In the Revolutionary War, Brooks, Warren, and Aspinwall were compeers of Putnam, Greene, and Knox in all the attributes of patriotism that marked the heroes of that period. Toner,¹ in an essay upon the medical profession in the Colonies

* Delivered before The Massachusetts Medical Society, June 13, 1917.

during the struggle for independence, commented upon the patriotism of physicians as follows: "When the principles of free government were being evolved and matured, no class of society or profession seemed to have deserved higher praise for its efforts to promote the result than that of the physicians."

While our European contemporaries have been facing obvious and great perils, enduring untold hardships, stanching the blood of nations and renewing man power in the face of modern warfare, we, in the serenity of our civil life, as if by some unseen messenger, are directed to join in the path of greatest service to mankind.

Heretofore the government of our country has, fortunately, not found it necessary to shape its military policy as extensively as that of the fighting nations of Europe. Without the array of military hospitals and schools of special military instruction, the United States has chosen to rely, to a large extent, upon the availability of its civilian resources for the care of the sick and wounded in time of war.

THE WAR OF INDEPENDENCE.

The earliest history of military surgery in the United States gives one a very luminous conception of the difficulties, privations, and untold sufferings that beset an army which was forced to meet, extemporaneously, all the exigencies of the sick and wounded in a war which required the aid of every citizen who had the intelligence to appreciate liberty and the courage to oppose tyranny. The army which gathered at Cambridge after the battle of Lexington was assembled without any effort of public authority. It was a spontaneous manifestation of patriotism, calling men from every station of life into immediate service. Few who thus responded believed that there would be real war. The majority of them looked forward to a compromise with the mother country, and as a result had arranged to be absent from their homes for a short period only. Physicians who came with them brought their own instruments and such medicines as they had in their offices, that sufficed during a brief period only for the necessities of the soldiers. Medical supplies of all kinds were extremely scarce and the army was ill supplied, as we learned incidentally from a resolution of Congress authorizing two surgeons who were so fortunate as to possess medicine chests, to lend them to other regiments that were not so well supplied.²

During the summer of 1777 the attention of the country was directed to the northern department under Dr. Jonathan Potts, where Burgoyne was advancing to capture or annihilate Schuyler's army. At one time the condition of affairs became so bad at Crown Point that only by prompt action was that portion of the army saved from destruction. Upwards of 3000 men were on sick report, and the losses from disease and desertion during the unfortunate campaign

in Canada had mounted to more than 5000 men. The army was in the utmost distress for want of medicines, hospitals, stores, and surgeons; and Dr. Stringer asserted in a letter to General Gates, July 24, 1776, that the men were literally dying for want of proper care and medical attention.

In the meantime affairs were not harmonious in the hospital administration of the middle department of the army. The want of supplies of all kinds caused great suffering among the troops in the Jerseys. Three thousand men who were fit for duty were detained in various hospitals because they had no shoes. The hospital stores were scanty, and all available means of supply had been exhausted. Winter was approaching and the sick were without blankets and many of them almost naked. Stoves were erected in the hospitals and all the hospital wagons employed in the transportation of fuel, so as to make up for the scarcity of blankets and clothing; but these efforts failed to check the growing discontent against the management of the medical department. The sick could not believe that their distress was the necessary result of the impoverishment of the country, and they were often allowed to believe that they suffered in order to enrich those high in authority.

The winter of 1779-1780 was very severe and the soldiers sick in tent hospitals endured many hardships. Private houses were used and the soldiers suffered from crowd poisoning. Hospital fever and dysenteries became prevalent. However, in this war of unprecedented marvels, sheer depravity in many departments of the army was unavoidable, but ingenuity and resourcefulness characterized an oppressed people. Dr. James Tilton of Delaware caused to be built a large number of log huts, built roughly so that air could freely penetrate the crevices. They were without wooden floors, the ground being hardened or baked by heat, and each hut was designed to accommodate five or six men. The fireplace was in the center of the hut and a hole left in the ridge to permit the exit of smoke. The plan was found to be very successful. The mortality from typhus diminished very decidedly, and the general results were so good as to warrant the introduction of the system throughout the army.

On September 3, 1783, peace was established with Great Britain, and two months later the American Army was disbanded. Whereupon the country was left practically without an army, and the price of a false security was soon paid. The Indians on the frontier manifested a hostile attitude. A regiment of infantry under Lieut.-Col. Josiah Harmar of Pennsylvania had already been defeated by the Indians. General St. Clair succeeded Harmar, and with a new force undertook an active campaign against the Indians. He, in turn, was defeated, losing more than six hundred killed and two hundred wounded.

WAR OF 1812.

During the period immediately preceding the War of 1812 it was apparent that in point of corps organization the medical department was notoriously deficient. No wisdom had been learned from the vexatious controversies of revolutionary days between the general and the regimental staff, inasmuch as the surgeons of the Revolutionary War had left few records of their experience. The management of military hospitals, the hygiene of camps, the diseases common among troops, and the surgical conduct of campaign were topics of which the profession of the country was entirely ignorant. When the certainty of war with Great Britain was realized, Congress hastily provided for an increase in the army and a corresponding increase in medical officers. The country at this time was poorly provided in all the essentials necessary for the formation of an efficient army. A long period of comparative peace had resulted in a decadence of military science, and the errors and hardships of the early campaigns had been forgotten. Most of the army officers who served in the struggle for independence, whose counsel and assistance were very much needed at the time, were dead or superannuated. The army organization was not a reality; the staff departments were sufficient for a force of not more than two or three regiments.

When the army mobilized at Greenbush, New York, Dr. James Mann of Massachusetts was ordered to superintend the Medical Department of this northern army. In reciting the difficulties which he encountered he says:³

"The mere organization of hospitals was the least perplexing part of duty. The ill defined powers, with which the hospital surgeons were invested, even in their own department, subjected them to many disagreeable interferences of the officers of the line. Collisions will always exist between officers of different departments of an army when their several powers and duties are not explicitly pointed out. Officers, tenacious of authority, assume as much as may be implied by rules and regulations. In addition to multiplied embarrassments, the various duties attached to the office of hospital surgeon, with those merely professional, were always so pressing, that little time was allowed to record, particularly, the diseases and medical transactions of the army, as they occurred."

In the fall campaign the sick at one time numbered 720 men at Plattsburgh. As the battle front was approaching this district and the sick could not be protected within the lines, they were transferred to Crab Island, two miles distant. No accommodations had been provided for them, and for three days they remained exposed to the wet and cold. Whereupon the surgeon in charge, Edward Purcell, had these patients transferred in open batteaux across the lake to Burlington. The hospital at Burlington was not large enough to accommodate this influx of new patients, but they were admitted, and the ill effects of crowd poisoning soon became manifest in the form of typhus and dysentery.

Early in 1815 peace became an accomplished fact, and on March 3 an act was passed reducing the entire military establishment to ten thousand men and the medical department to five surgeons and fifteen mates. Although the medical department of the United States army during this war was neither adequate nor efficient, they succeeded by unnecessary and untold sacrifices. The nation was at once satisfied to allow this important department to drop back into a state of lethargy. As in the Revolutionary War, there is ample evidence of the skill, devotion and the capacity of individual members of the profession. Hospital-surgeon Mann, Medical Director of Plattsburgh, reports from that place in November, 1814, to Surgeon-General Tilton:⁴ "In events of high importance it is seldom that the medical staff is noticed. This is discouraging to the ambitious young surgeon of the army. It may be alleged, the surgeons being non-combatants, are out of danger. This however is not always the case. During the investment of Plattsburgh by the enemy, the surgeons were constantly passing from fort to fort, or block houses, to dress the wounded, exposed to a cross fire of round and grape shot; while the greater part of the army was covered by fortifications. The cool bravery of the surgeons was noticed by the commander-in-chief." Continuing the report, Dr. Mann writes: "I feel myself bound to report, with much respect, the conduct of all the medical gentlemen attached to this army, who have at all times during this campaign performed their duty; and who, for their particular services, during and after the investment of Plattsburgh by the enemy, merit the applauses of their country."

There were continued efforts toward retrenchment in the medical department during the period of peace which followed the War of 1812. Surgeon-General Lovell, whose faithful and economical administration of his department was a matter of universal commendation, appealed again and again to the Hon. J. H. Eton, then Secretary of War, for an increase in the number of officers in the medical department. His petitions were followed by recommendation from the Secretary of War to the military committee of the House that:⁵ "The Surgeon-General of the Army might be dispensed with. . . that he had no responsibilities to encounter; that his duties were essentially performed by a quartermaster of the army at New York." The subsequent controversy which followed this recommendation resulted, fortunately, in a victory for the Surgeon-General. If one's imagination were to run riot it could not overdraw the picture of demoralization in the medical department which would have occurred during the Civil War under such sinister influence.

THE MEXICAN WAR.

At the onset of the Mexican War, May 13, 1846, the army was found to be grossly inade-

quate in numbers and equipment. A call was made for fifty thousand volunteers. For the medical department one surgeon and one assistant surgeon were assigned to each regiment. Subsequent events proved that the volunteers were indiscriminately accepted, and the volunteer surgeons who entered the service with little or no military knowledge, with an occasional honorable exception, were inefficient.

In the progress of the army towards the city of Mexico the health of the soldiers was far from satisfactory. "It found in the disease of the country," wrote Surgeon Satterlee, "foes more to be dreaded than the Mexican troops." While a large proportion of the soldiers had become incapacitated on account of their unacclimated state, the great majority of the sick, as indicated by the reports of Satterlee and Tripler, resulted from hasty preparation, indiscriminate selection of volunteers and a lack of knowledge of medico-military science in the army medical organization.

However, individual examples of heroism and resourcefulness characterized the medical men of the U. S. Army in this campaign, as in former wars. Major-General Worth, in his official report of the operations of his division on the Molino said: "It is again my gratifying duty to present to the general-in-chief for commendation the names of those ever faithful and accomplished medical officers, Satterlee, Wright, Simpson, Simons, Dyerle and Roberts. Soon after the surrender of the Mexican forces at the capital, our garrison which was left at Pueblo, consisting of eight hundred men and eighteen hundred sick, wounded, and disabled in the hospital, became surrounded by large bodies of guerillas and several thousand Mexican troops. The affair assumed the importance of a siege, and lasted from the 13th of September to the 14th of October before relief was obtained." From the official report of Colonel Childs it would appear that the surgeons and their assistants in this campaign were worthy to rank among the bravest warriors in history. His report in part was as follows:

"To Surgeon Mills, Chief of the Medical Department, and to his assistants, great praise is due for their unwearied and laborious services. Left with eighteen hundred sick and limited supplies, with but six assistants, their utmost exertions were necessary to administer to so many patients. These gentlemen were not only occupied in their professional duties but the want of officers and men compelled me to make large requisitions on surgeons and invalids for the defense of the hospitals and they were nightly on guard marshalling their men upon the roofs and other points."

Surgeon William Roberts, by virtue of his skill as a medical officer and his personal bravery, became a conspicuous figure in the war. Col. McIntosh of the 5th infantry thus mentioned him in his official report of the battle of Churubusco: "His talents and zeal were not alone confined to his profession, but were displayed in a military capacity in urging on the

men to the contest." Dr. Josiah Simpson, in a short narrative presents a final picture of this brave officer marching gloriously to death in the charge on the Molino. All the officers of one company having been shot down, Dr. Roberts took command and was mortally wounded in the assault. He was struck by a musket or escopet ball on the temporal ridge of the frontal bone, about two inches above the left supra-orbital arch; the ball glanced, fractured and carried away a portion of the frontal bone, leaving the brain exposed. Abscesses which formed in the cavity of the cranium caused his death. In the army reports there is evidence that Dr. Roberts possessed unusual attainments as a surgeon as well as a soldier, and among the unique figures which have adorned the medical department of the army, he ranked with Warren, Brooks, Jones, Fuller and Trowbridge of the previous wars.

THE CIVIL WAR.

At the outbreak of the Civil War the medical corps consisted of a surgeon-general, thirty surgeons and eighty-three assistant surgeons. Promotion, being by seniority of service, could not follow as a result of high qualification. "The tendencies of this system," wrote Jenkins,⁶ "repressed the promptings of professional ambition and favored contentment in the dry path of old routine."

A special commission of medical men presented a bill to Congress which became a law on April 16, 1862, introducing new features of the greatest value into the organization of the medical department, besides greatly increasing the number of medical officers. One feature of the law provided for the selection, according to merit and eminent qualification, from the whole number of medical officers in service, whether of the regular or volunteer army. This was said to have been the first instance in which legislation inspired the ambition of members of the medical staff by associating their achievements with the rewards of a laudable ambition. As a result of this law, Dr. William A. Hammond, an assistant surgeon, became surgeon-general of the army. He introduced liberality and promptness in the purveying department; he substituted airy and ample hospital buildings for old hotels and seminaries, and raised the scientific standard of admission into the army medical service.

Approximately 12,000 medical men who served the country with remarkable credit were mustered into service between April, 1861, and the close of the war, for an army of 2,213,365 men. In the annual report of the Surgeon-General for 1865 he says:

"In conclusion I desire to bear testimony to the ability, courage and zeal manifested throughout the war, by the officers of the medical department under all circumstances and upon all occasions. With hardly an exception they have been actuated by the highest motives of national and professional pride

and the number who have been killed and wounded bears testimony to their devotion to duty on the field of battle."

Thirty-two surgeons were killed in battle and nine by accident. Eighty-three medical officers were wounded in action, ten of whom died. Four died in rebel prisons, seven of yellow fever and two hundred and seventy-one of other disease, making a roll of honor of 406 names of those who are commonly considered not to be exposed to the dangers and chances of war. Some conception of the amount of work done by the medical officers during this war may be gleaned from the report, which states that 1,057,423 cases of wounds and diseases occurring among white troops were treated on the field and in the regimental and post hospitals. In the medical and surgical history of the war in the Surgeon-General's office we find that of 304,369 deaths during the war, 44,238 were killed in battle, 49,205 died of wounds; 526 were suicides, homicides or executions; 186,216 died of disease; and 24,184 died of unknown causes. It is worthy to note that approximately 60% of all deaths was due to disease.

The willingness on the part of Secretary of War Stanton to respond promptly and in full measure to the demands of the Surgeon-General, together with the ability of these two officials to cooperate intimately and in the most skillful manner, contributed greatly to the success of the medical corps.

There were many noble specimens of a surgical character developed during this carnage of a nation. Letterman became distinguished for the perfection of a trained ambulance corps. Flint and Gross revolutionized field surgery, and their methods have been copied by all civilized nations. Hammond encouraged scientific investigation, fostered army medical societies, established a museum of pathology and promoted a compilation of the medical and surgical history of the war,—movements of unprecedented value in the direction of medical progress. Barnes, as Surgeon-General, established the right of medical officers to command within their own field of action; White, a hero, was slain on the battlefield of Antietam; and Wood, Porter, and a host of others might be mentioned.

The Surgeon-General attested the respect and gratitude of the medical staff to the Secretary of War in his report for 1866:

"It is a matter of just pride and congratulation to the medical profession throughout the civilized world that your deep interest in the health and hygienic conditions of the army, your constant vigilance and most liberal assistance in all that could in any manner conduce to the greater comfort and welfare of the sick and wounded, and your official recognition of faithful and meritorious service by officers of this department, have been responded to on their part by redoubled exertions, unflinching devotion to duty and an *esprit de corps* that secures to it professional talent of the highest order. Letters from the most eminent surgeons and physicians in Europe, in acknowledgment of publications from this office, do

not express more astonishment of the magnitude of the war, than admiration of the unvarying support and encouragement extended to the Medical Staff under your administration of the War Department."

There are few pages in the history of the United States more splendid and significant.

THE SPANISH WAR.

The military peace establishment which followed the Civil War declined in force up to the crisis with Spain in 1898. The appalling list of sick in the summer camps during the Spanish War and the deplorable condition of affairs at Santiago were the inevitable consequences of a medico-military policy that had become mouldy. Under tents in the hospital yards of Boston, as many of you remember, there lay scores of ghastly bodies of the sick from squalid and unsanitary training camps. Authorities agree that haste, lack of preparation and the service of amateur medical officers were fundamentally responsible for the 2000 deaths in camp and the hordes of sick men. Lieut.-Col. Munson, in a recent editorial in the *Military Surgeon*, under the title of "Then and Now," discloses a situation during the Spanish War which was a discredit to a nation exhibiting a form of government which, though serene in times of peace, presented a crooked path to safety in a conflict of arms that was anything more than a feeble war. For it must be remembered that in this war we were fighting a nation which had traditions, but was incomparably inferior to our own in men and resources. He calls attention to the fact that a number of very good physicians were appointed from civil life as Corps, Division and Brigade Surgeons, and that not one of them had the most remote idea of the duties of these offices and resented assignment to the immediate care of the sick, which duty alone they were qualified to perform. "A thousand things were wrong and very little right, except the stout hearts of the good old soldiers," wrote Munson. "These did their duty and died after winning the war. Their comrades of the camp died, too; not in the fierce charge or stubborn retreat, but in rotten, ill-managed bivouacs, immobilized in their own infectious filth. Our President then postponed, even as our President now was forced to postpone the fateful declaration of war, because he knew we were not ready. But the people demanded action no matter the cost and—they paid the bill."

NEGLECTED EXPERIENCE CONFRONTING REALITY.

The value of history is to be found in the lessons that it teaches. A knowledge of military affairs that is particular is not required for the student of history to autopsy the dead periods in the military policy of the United States. Legislating the army and its medical arm into a grossly inefficient body for any emergency has been a conventional practice after each war, for more than a century. Every era of peace has been characterized by re-

trenchments and comparative inactivity until a condition akin to scurvy has systematically characterized the war department during such intervals. At the close of the Revolutionary War it was felt by the people that the immense armies of Europe were chiefly used to preserve the balance of power on the continent or to overawe the people, and were considered unnecessary in a republic separated from all possible enemies by a broad ocean. In his farewell address to the American people Washington admonished them always to maintain suitable military establishments for adequate defensive positions. His importunities were not heeded and the army was disbanded. The result, as previously detailed, was a few short dark pages in the history of the nation. Thomas Jefferson, in commenting upon the risk of relying always upon soldiers trained in emergency, warned the country in the following words: "It proves most forcibly the necessity of obliging every citizen to be a soldier. This was the case with the Greeks and Romans, and must be that of every free state. We must train and classify the whole of our male population. We can never be safe until this is done."

An unbroken line of leading statesmen and soldiers, from Washington to General Leonard Wood, have petitioned the nation in favor of universal service. "We should never again be found to be willing for war but not ready for war," said Dr. Wood, before the Senate Committee on Military Affairs, in exposing the depravity of our common needs for defense, after the world's greatest war had been two and one-half years in progress. Presenting still other truths which common sense has placed beyond contradiction, he said: "Its lessons as to equipment, development of arms and munition are an open book to the world. No amount of money and no amount of effort can purchase time and make good its loss." On this same occasion this commander referred to the enthusiasm commonly manifested by our people over some new form of torpedo or a general discussion of the organization of our reserves, but he indicated their failure to grasp what should be the main thought,—that it takes a long time to prepare the absolute necessities for war. "People fail to appreciate," continued Dr. Wood, "that these common necessities must be gathered in times of peace, and the organization of all our resources should be engaged in maintaining the supply once war is upon us."

These thoughts are not new, but they are more solemn just as we realize that we have not chosen to depend upon an intellectual preparation of our own. It may be that our over-refined spirits have become habituated to a state of ease and a sense of security as the result of long freedom from war's perils. Consequently there has developed among us a repulsion and loathing for the whole business of war now that it has degenerated to a level of bloody ruthlessness, fiendish ingenuity and insensate cruelty.

This is confirmed by the fact that our military policies have been screened and approached only with the widest margin of political safety. In no war of the last century have the lessons of inefficiency served to increase the pace of our sluggish war machine. Now we find that war with all its ramifications, so profoundly hated by us and so long repudiated as an anachronism, actually confronts the nation.

When England declared war in 1914, Mr. Britling, imbued with patriotism, went to London to offer his services. He had no idea what arm of the service to go into. He wanted to help; that was all. He wanted to do whatever the government thought he was best fitted to do, whether it took him to France or kept him in London. For two days he wandered about seeking information. He found no disposition to welcome him. His own keen determination to do something for his country was blunted by a perplexing "how?" At last, tired and disgusted, convinced that the nation at large must take hold of the government it had so long neglected, he returned to his home in the country still unassigned for duty. There are many Britlings in America, but happily for American zeal they do not go as far afield nor run amuck. The man who volunteers soon disappears from his old haunts. The surgeon is accepted with a promptness that is unnerving. Few of us are any better prepared than Mr. Britling, but willing men among us are not found adrift.

THE ISSUE.

Now that we are embarked upon war; now that the proverbial appeals of the pacifists are at least temporarily shunted; now that we no longer dare trust in a divine Providence which singularly in this war had not seen fit to stand by weak nations; now that the old *apparatus belli* is forced into the hands of our young men, college men largely, who, though questioning momentarily the sagacity and far-sightedness of their elders, sign up and enter the crusade with a vengeance;

"So nigh is grandeur to our dust,
So near is God to man.
When duty whispers low, Thou must,
The youth replies, 'I can.'" Emerson.

Now that these young men have gone, many of them to exchange their places in the class album for records on the roll of honor; now that some have publicly appealed for a fair chance, not necessarily to live, but to die to some purpose, to die with the thought that what they give, life itself, may not be entirely in vain, may we not ask for a fair chance to meet this human price of war? We are chosen to construct and reconstruct the builders and destroyers of nations. Is it any less imperative and urgent that we are properly instructed in the ground principles of military medicine? Should the physician be expected to bolt his practice and outstrip the wind? "An officer of the line may soon learn

the duties of the field and a surgeon be amply qualified for his profession, and both of them be worse than useless in the army," wrote Surgeon-General Lovell, after the War of 1812. "For there can be little doubt," continued he, "that where one man has died from improper medical treatment, ten have been destroyed from want of knowledge of the many duties peculiar to the army surgeon." The wise counsel of the "lamented" Lovell has been proclaimed again and again for a century, but never heeded.

The fundamentals of our education have been directed along avenues for success in practice, teaching and research. Individualism and independence prevail almost without margin. We glory in the liberal exercise of that principle, charity, and in the breast of every physician there dwells hope, yes eagerness, to contribute something to the welfare of mankind. But the average American physician has recognized no duty to the State. Never until war times arrive is he enlightened upon the subject of national service. Until within a few years our government has not been interested, helpful nor solicitous of the welfare of medical men except in war periods. The martial element in a man's position who must respond to the "tap of the drum" and the "word of command" for a lifetime has not appeared to be congenial to the tastes nor tributary to the progress of men of study and science.

So it is apparent that medical men in the aggregate and the nation have not existed for each other. Surely the heroic men of science, who have gone to their death through a desire to aid mankind, would have it otherwise. Donnelly, who volunteered to fight typhus among the Serbian soldiers and died of that disease in that service; Ricketts, who gave his life for humanity and science while investigating Mexican typhus; McClintie, who died in his early manhood from the Rocky Mountain spotted fever while investigating that disease in the Bitter Root Valley of Montana; and Lazear who, like the ancient Roman who thrust his hand into the devouring flame, calmly let a mosquito remain on the back of his hand until it had inserted the organisms of yellow fever, from which this physician died,—these men and hundreds more of such martyrs in humanity's service would have us enlightened, booted and spurred for the task ahead.

While the medical profession acknowledges its obligation to be prepared for this species of public service, and its members hold themselves ready for the duties of the field whenever their country calls, the country, in turn, must reciprocate the benefit by indicating its purpose to elevate the profession and coöperate with medical schools in providing the necessary resources to make the student conversant with the military contingencies of his vocation.

It is my purpose, therefore, to urge that you subscribe to a plan which should have a far-reaching influence in the education and training

of medical men to measure up to the demands of war. Briefly, it involves the foundation of a chair in military medicine in our largest medical school. The need presents itself now as visible and vital. The task of converting the medical profession almost overnight from civilian practitioners into all the mysteries of medico-military science is proving to be stupendous. Some conception of the nation's requirements may be gleaned from reports indicating that with the first 500,000 men will march the entire trained medical personnel of the nation and 2000 additional volunteer medical officers. The next 500,000 troops would be at the mercy of an additional 3500 green medical officers. An army of 5,000,000 men would require the services of 35,000 medical officers. Should there be great naval activity this fighting department would need medical officers in equal proportion to that of the army. There are 147,000 physicians in the United States and nearly, if not every one, was graduated from his medical school and hospital without hearing reference to this possible contingency.

Capt. Mahlon Ashford, in a recent article⁷ on organization and training of military men, says: "It is a great task to gain the attention of the vast and diverse audience composed of American physicians; an even greater one to convince them of any general necessity for a military education or military service of any character for American doctors in time of peace." The compelling want of a change of spirit, he indicates in the report of Sir A. Keough, Director General of the British Army, in speaking of the expansion of the British Medical Service in this war: "The burden of responsibility thus placed upon the medical profession could not have been assumed but for the preparation made in peace, for the nucleus of trained officers in so large an army medical corps as the country now possesses would have been too small had the old conditions prevailed. As it was, the country was able to take the field with a larger number of experts in administration than it has ever before possessed, but this meant that owing to the magnitude the war so quickly assumed, nearly all the officers of the medical corps were required to give their attention and their energies to administration, leaving to specially selected experts the technical work which the care of the sick and wounded required. Hence the appointment of consulting surgeons by whom all subsequent surgical development can be determined. The internal organization of the medical units; the formation of cadres for the battalions; the establishment of hospitals at home and the formation of those abroad; the provision of doctors, nurses, drugs, instruments, dressings; the equipment of ships and trains. If to these is added the mass of work connected with the supervision of recruiting for the new armies, their housing, and the sanitation of camps and barracks, some idea

will be gained of the scope and relation of medicine to the art of war, and the part played by medical men will be realized."

In respect to its medical arm, it is apparent that the British Empire has heeded the lessons of the Crimean War. Bullets killed thousands in that great conflict, but disease, in its silent approach, swept off tens of thousands. Baudens,⁸ in his account of the expedition to Crimea, says: "General Yussuf had resolved by a night attack to fall suddenly upon the troops assembled around Babadagh, but at the moment the order for departure was given, at about six o'clock in the evening, five hundred men lay stretched upon the earth, unable to rise. Cholera had fallen like a thunderbolt upon the expeditionary column. At eight o'clock there were one hundred and fifty dead and three hundred and fifty dying. The pestilence continued its ravages, and the expedition had to be abandoned."

Before the Crimean War, England, like the United States today, had but one chair in military medicine in the whole country, yet she numbered many brilliant surgeons within her realm. As in former wars, she had enlisted the services of such distinguished surgeons as the Hunters, the Coopers, Bell, and Guthrie, so during this period of the Crimean War she secured the aid of Paget, Simpson, Ferguson, Erichsen, Spencer Wells, and a host of others. In this war, however, the one outstanding figure, whose distinction was unparalleled, was Florence Nightingale. Prior to her departure for the battlefields, she had made a tour of study of the hospitals of England, and found their sanitary management was deplorably deficient. She journeyed to France, Germany and Italy for instruction, and in the large military schools and hospitals of these countries she equipped herself with a knowledge, the application of which gave her a position of pre-eminence among the brilliant ornaments of a great profession. At this time there were professorships in military medicine in Paris, Mentz, Lisle and Strassburg. Cardinal Richelieu in his period had established a military hospital in every fortified city of the kingdom. From the conduct of France in the present war you will agree that the foundation in medico-military medicine, established by Richelieu, and advanced by Ambrose Paré, Percy and Larrey,—still lives to secure the pillars of that nation's preservation.

It was a saying of Frederick the Great that fever cost him more than seven pitched battles; and it has been an axiom with most military leaders that more campaigns are decided by sickness than by the sword. Dr. Hermann M. Biggs, who has recently returned from France, has stated that 86,000 soldiers have had to be removed from the trenches because they were incapacitated on account of tuberculosis, and that the alarming increase of the disease in the army was largely due to imperfect medical examina-

tion of recruits, which allowed those who were affected to pass.

No more phrases are necessary to prove that the soldier is a costly piece of national property. He is not made in a day. It takes time and about \$1200 a year to develop in the recruit the proper attributes of a soldier, and no species of property suffers more from neglect and inattention. For his well-being the medical officer is immediately responsible from the time the recruit is mustered in until he is discharged from service. The art of keeping the soldier efficient is the all-important factor in war.

Are we not, therefore, justified in the fullest measure in making an appeal that the opportunities for instruction in military medicine which have been denied us, be given unsparingly to all succeeding generations of medical men?

We look upon our own emergency preparation, consisting of an interrupted course of lectures at Harvard Medical School, in a spirit of sorrow. Thankful for the instruction that was given, our feelings are, nevertheless, mixed with disappointment, uncertainty and anxiety. The "fighting edge" among men is less easily acquired in the fourth and fifth decades of life than it is in the formative years. To be deep rooted, the spirit of national service should be inculcated when the mind is plastic. A life that is moulded and fixed in peaceful enterprise recoils at the thought of new formations for war.

A place for medico-military instruction in all of the recognized medical schools of the country has been recently advocated by many recognized authorities. Dr. Franklin H. Martin, representing the Council of National Defense, and Dr. F. F. Simpson, of the Advisory Committee of Civilian Physicians and Surgeons on Medical Preparedness, have encouraged the medical schools to introduce courses in Military Sanitation and urge the students to participate in them. Capt. Mahlon Ashford in his Welcome Prize Essay, published in the *Military Surgeon* for February, 1917, presents incontrovertible facts to indicate that the proper place to begin the instruction of medical men for military emergencies is the medical school. "Here," he writes, "we can reach every potential doctor, not an occasional one, as under the present system. . . and the period of medical student life is the one time when the physician can interest himself in acquiring military essentials with least personal and professional sacrifice."

Lieut.-Col. Munson, in the course of frequent editorials in the *Military Surgeon*, advocating some plan of military instruction in medical schools, urges that every candidate for a state license should pass examinations in military sanitation. Thus far let us grant the principle that in the curriculum of every medical school there should be a department devoted to military medicine, surgery and sanitation.

In the National Defense Act of 1916 all rep-

utable schools and colleges are encouraged to have military training for their student body. Yet Dr. H. D. Arnold, as Dean of the post-graduate department at Harvard Medical School, informs us that in July, 1916, he was unable to obtain an army officer in New England or elsewhere, either on the active or retired list, to give a course of lectures. It obviously required ingenuity and determination on his part to obtain Lieut.-Col. Chamberlain for a period of six weeks during the present year. In a department of the medical school curriculum for which so much importance is now and will continue to be justly claimed, should its mechanism be hampered by the vagaries and uncertainties of political administration? If all medical schools recognized by the American Medical Association, seventy in number, adopt courses in military medicine, the demand for instructors will always be pressing. The personnel of the department must be left in some measure, at least, to chance. Unless all precedents fail, the proverbial demands for economy in periods of peace will be met with retrenchments; and unless we are approaching the millennium the same nightmare of "public opinion" will be flaunted in Congress to curtail, or inhibit, the real value of the Department of Military Medicine in the Medical School. In order to prevent such embarrassments, and to establish a department for instruction in military surgery upon a high standard and there perpetuate it, there should be an endowed chair. The occupant should be selected by the faculty of the school, and retained or dismissed according to their judgment of his capacity. That intimate coöperation between the school and the Surgeon-General's office would obtain at all times, is not to be gainsaid. But the assurance that the military department in the medical school would continue its function in peace times is the principal justification for its foundation. Only by the endowment of a professorship can this be secured. In so far as I can ascertain, there is but one professorship in Military Surgery in the United States, that held by Col. Louis A. LaGarde, M. C. U. S. Army, retired, in the New York University. There is not an endowed chair in Military Medicine in this country.

It is my hope that the Massachusetts Medical Society will initiate and sustain a movement to establish a Chair in Military Medicine at Harvard Medical School. For the successful prosecution of this method of dealing with our new obligation in this important field of education, the current war period is most opportune. The watch-word of today is "preparedness," but in peace times every known resolution to prepare for possible war has suffered from blight. The nation now exhorts us to plant seeds of everything useful that grows. The seeds for enlightenment of future generations of medical men should be sown today. We know that the selection of the seeds and the soil and the grangers

settle the question of the harvest. If we may call upon the friends and patrons of the healing art to aid us in producing the seed, Massachusetts, which sprung from a seed that resolute men planted on the shores of the American wilderness, will furnish the soil and the grangers. A fund of one hundred thousand dollars is needed. With the indication for its beneficent purpose so clear cut, there could be no more auspicious occasion than this upon which to render our appeal. If this war does not open men's ears to the bigger lessons, what will? Nobody remains in this great society, at least, who needs to be convinced of the incompetence of medical men for impending service; neither does anybody remain to be convinced that we are face to face with the most powerful and fiendish war machine known to history. Conviction, then, should lead to action, for is not this war compelling the peoples of the whole world to listen, to admit the truth, however bitter, and set their house in order as for the day of wrath?

This society has a record of hard work, well done for more than a century. Its leading function under its charter is to provide well-educated physicians and surgeons adequate to the wants of the community. It was founded by men who voluntarily relinquished their employments and the joys of home that they might aid in securing the freedom of their country. Adams, Holten, Warren, Holyoke, Baylies, Tufts, Rand, Bartlett, Danforth, Dexter, and sixty others, having just "emerged from physical vassalage," lost no time in constructing the pillars of this institution. Their prudence and sagacity are as easily traced in the archives of science as in the cabinet or on the field. The public estimation of the Massachusetts Medical Society was manifested at one time through the government of the State by a grant of a township of land² in order to extend its beneficent work among the people. In every period since the Revolution one may find within its ranks the names of eminent physicians and surgeons, who were distinguished as philosophers, scientists, teachers, civilians and soldiers.

Each year many of its members pay the universal debt, and among those who have departed since the last anniversary meeting, two, at least, were familiar and esteemed figures before this audience. It is most fitting that we should pay a tribute of gratitude and respect to the memory of our former president, Dr. Charles F. Withington, who conducted these exercises one year ago. His name is worthy of distinction among the men who have labored in the service of this organization. We may be thankful for his tactful courage, which could fight and win. With it he gave a tone and direction to public opinion. Zeal, courage and industry characterized every phase of his career, and freely do we pay homage to his life, which steadfastly toiled for our common good.

Aside from the product of genius, the great-

est achievement of life is the effulgence of a noble character. In that relation we think of Dr. Walter J. Dodd. In his death we may chronicle the passing of a martyr in the cause of science. Beyond the moral influence of that sacrifice is the outstanding example of character that withstood serial assaults of painful disease with no apparent abatement of his good nature. He was most able in the eye of the profession, but humble in his own. Stoic fortitude prevailed in Dr. Dodd's daily life, and his character is an example to all mankind. Wherever it is known, and the circle is wide, it heartens men in vivid recognition that usefulness without selfishness is the example among men which a whole world craves to imitate today.

Mr. President and Fellows: Today the opportunity presents itself for us to do something material to commemorate the faithful, yes, the liberal services of these men. In the avenues of their wisdom, from Holyoke to Withington, the people of this Commonwealth have safely confided for one hundred and thirty-six years. The events in their lives not only bring home the sensation of a common loss, but carry with them a hope that we may be more forcibly reminded of our common interest and the needs of safeguarding the priceless legacies of our deceased worthies.

This opportunity to establish a Chair in Military Medicine in Massachusetts for the conservation of their gifts is a rare privilege, which comes to us only while our country is over-spread with the gloom of war. The Surgeon-General has given his approval of the plan, and the coöperation of the medical department of Harvard University is assured. Let us then, inspired by the heroic sacrifices of the men of the past, and prompted by a common knowledge of our present needs, rise to the occasion and promote this contribution, to the lasting honor of our Society, to the credit of our Commonwealth, and for the elevation of the standards of our service to the Nation.

REFERENCES.

- ¹ Toner, J. M.: *Medical Men of the Revolution*, p. 5, Philadelphia, 1876.
- ² Medical Dept., U. S. Army 1775-1875, p. 6.
- ³ Mann, James: *Medical Sketches of the Campaigns of 1812*, '13, '14, p. 6, Dedham, 1816.
- ⁴ *Ibid.*, p. 271.
- ⁵ Med. Dept., U. S. Army, H. E. Brown, p. 145.
- ⁶ *Transactions Westchester County (New York) Medical Society*, June 16, 1862.
- ⁷ *Military Surgeon*, Vol. xi, No. 2.
- ⁸ Bandelin: *La Guerre de Crimée*, p. 180.
- ⁹ *Resolutions*, February 10, 1810.

Original Articles.

GASTRIC AND DUODENAL ULCERS.*

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In his oration on surgery before the American Medical Association in June, 1900, my

* This paper takes the place, and is based on the material, of one read by the author's father, the late William L. Rodman, A.M., M.D., of Philadelphia, before the Surgical Section of the Suffolk District Medical Society, at Boston, Dec. 15, 1915.

father first advocated excision of the ulcer-bearing area of the stomach for the cure of gastric ulcer. He urged it as theoretically ideal, preventing as it does future hemorrhage, perforation, hour-glass stomach and malignant degeneration. This seemed, for the times, radical surgery, since medical men generally were still treating gastric ulcers without the help of surgery and practically everyone believed that it was only a small percentage, at the most one quarter, of the total number of cases, that came within the surgical domain.

Since 1900 rapid strides have been made in gastric surgery, made possible by physiological, pathological and clinical progress, a large part of the latter being due to the development of the Roentgen-rays as an accurate method of diagnosis of the gross lesions of the stomach, so that today surgery can and does cure the majority of gastric and duodenal ulcers, if the surgeon is called in time to prevent the complications of hemorrhage, perforation, hour-glass stomach, and malignant degeneration; and even 30 per cent. of gastric carcinomata are being cured in the hands of the Mayos, because excision of the ulcer-bearing area has come to be recognized as the operation of choice since it removes the ulcers in the stage where it is impossible to differentiate early cancer. This can be done only by the microscope. Progress such as this is most encouraging, since approximately 75,000 people die annually in the United States of cancer, and about one-third of these, of cancer of the stomach.

Etiology. Despite the work of many investigators the cause of gastric ulcer still remains undiscovered. It is manifestly impossible to discuss each of the many interesting theories that have been advanced. One of these, infection, appeals generally to clinicians accustomed to treat the same process in other parts of the body due to this cause. It is easily conceivable that such infection may occur from the appendix, tonsils, or mouth, as has been suggested. The work of Rosenow, Steinharter, Turck, Singer, and others, lends weight to the opinion that infection may be the direct exciting cause, although others have failed to produce typical ulcers by infection (Wilensky and Geist, Callar and Thalheimer). That there are other factors involved seems probable. It is reasonable to suppose that the action of the gastric juice has something to do in the conversion of a "peptic" into a chronic ulcer. Here again laboratory workers disagree. There is evidence that such is the case (Bolton) as well as that which seems to prove the contrary (Dragstedt).

The diagnosis of ulcer, either gastric or duodenal, is not ordinarily difficult. "Indigestion" and pain in relation to food intake are still recognized as the leading clinical symptoms of both types of ulcer, gastric and duodenal. In the former, pain comes on from a half to one hour after eating, while in those suffering with duodenal ulcer, pain is worse on the empty stomach

three to four hours after eating and is relieved by eating; so-called "food ease," thought to be so characteristic of this condition. Vomiting depends a great deal on the presence of pyloric obstruction and is, therefore, not dependable as a symptom of ulcer. It may be entirely absent. Haematemesis is a big help, of course, in the clinical diagnosis, as is melena, coupled with a history of previous indigestion. But hemorrhage is a complication and not a symptom, so we must not expect it or wait for it, to make a positive diagnosis. We have not found the strictly localized pain area always present in gastric ulcer, though it is emphasized as characteristic by Leube. Pain in both gastric and duodenal ulcers is more apt to be a general soreness referred to the entire epigastrium and often to the back.

W. J. Mayo has well stated that importance should be attached to the findings in any case of gastric or duodenal ulcer in the following order:

- a. The history.
- b. X-ray findings.
- c. Physical findings.
- d. Laboratory findings.

Graham found that 72 per cent. of the cases of duodenal ulcer gave a characteristic history while 71 per cent. of gastric ulcers did so. It is impossible to tell clinically with any degree of accuracy whether or not an ulcer is undergoing malignant change. Indeed this differentiation is almost as difficult after the abdomen has been opened. If W. J. Mayo, with his enormous experience in gastric surgery, finds it impossible to distinguish at operation between a chronic ulcer and one that is beginning to undergo malignant change, then surely others with less experience will have the same difficulty. Dr. Mayo has said in a personal communication to my father that "in three cases out of four when we remove a suspicious ulcer it proves to be a carcinoma, and a number of cases after gastroenterostomy for supposed ulcer have developed carcinoma so quickly as to make it almost certain that it had existed at the time of operation." Smithies, who has also had a large experience in the diagnosis of gastric diseases, states: "It should, however, be firmly emphasized that, in a given chronic gastric ulcer, we have at present no means at our command that enables us to tell which chronic ulcer is destined to pursue a benign course and which will become malignant."

One may surmise that malignant degeneration has taken place if anorexia becomes pronounced, the pain more constant, the attacks of haematemesis more frequent, the vomited blood darker. Tuffier described a type of ulcer as latent "Ulcer-Cancerous almost from its beginning. Here the symptoms of ulcer are absent or are present in very slight degree, such as mild dyspeptic disturbances which may last for a number of months. After a short time how-

ever, the signs of cancer develop rapidly, there being complete anorexia, vomiting of dark blood, considerable anemia and rapid deterioration of the general health.

Oettinger, who has carefully investigated this subject, while admitting the impossibility of making an accurate diagnosis of beginning malignancy in a majority of instances, states: "There are, however, certain circumstances which may lead one to suspect malignancy; thus, if pain persists, despite the employment of dietetic and therapeutic measures, which generally control it in acute ulcer, and continues to be present late in the disease, we may justifiably expect that the lesion is not benign. The character of the pain is neither that of simple ulcer, which is so commonly relieved when the patient vomits, or assumes a special position, nor is it that of cancer, which is, as a rule, not severe. The pain is violent, constant, radiating to the ribs, and thence to the lumbar region, particularly to the last dorsal or first lumbar vertebrae. A second symptom is anorexia. Refusing nearly all food, the patients rapidly become emaciated and weak. The amount of vomited matter is rarely large, although the patients vomit very frequently."

He later states: "Little of value is to be learned from analysis of the gastric contents in these cases, as the chemical characteristics may be the same as in simple ulcer." The rapid and regular diminution or disappearance of hyperacidity at intervals is, according to those best versed in the subject, the most important sign to be derived from such examination. Hayem, who has done much work along this line, states that when hyperchlorhydria is superseded by achlorhydria, it is almost certain that cancer is developing.

Albu maintains that an early diagnosis of gastric cancer can oftentimes be made, if it can be shown that a slight, but progressive loss of weight is taking place. It may be so slight as to escape the notice of the patient and physician until finally it is so marked as to be apparent to all. He furthermore emphasizes the fact that this slight loss in weight continues in spite of extra nourishment taken between meals in the form of concentrated and easily digested foods. Therefore, he believes that, if the patient loses weight steadily, although enjoying his meals, seemingly digesting them, and, in addition, partaking of nourishing food between meals, a diagnosis of carcinoma is justifiable. This loss of weight, he says, occurs in carcinoma of the fundus as well as of the pylorus. The differentiation between these two forms, he believes, may be made by testing the functional activity of the stomach. In the beginning of carcinoma of the fundus there is little or no diminution in motility; free HCl is markedly decreased or absent. Thus, we have a picture of chronic atrophic gastritis. In carcinoma of the pylorus, on the other hand, there is very early seen a marked impairment of gastric motility

and there is a steady decrease in the amount of HCl; in other words, we have pyloric stenosis plus a constant diminution in the HCl from month to month, perhaps from week to week. The subjective symptoms are so widely variant in different cases, and in the same case from time to time, that they are practically valueless.

The help obtained from the clinical laboratory has not kept pace, in our experience, with progress in other fields. The findings are so inconstant as to lead to confusion, were much reliance placed on them. Hyperacidity of course, is still looked for in both gastric and duodenal ulcers. It frequently is absent in gastric ulcers, however. It may be that this is due to the fact that gastric ulcers so frequently undergo malignant change. Hyperchlorhydria is the rule, however, in duodenal ulcer. The value of a single test meal examination has been shown to be little, and repeated examinations are exceedingly disagreeable and trying to the patient so that it is natural that we should not depend much on such findings for help. The more recent work of Hawk, Rehfuess and others promises better results. We have not as yet had enough experience with the fractional method of determining the acidity of the gastric contents to express an opinion as to its value. On the other hand, it would be difficult to overestimate the value of the x-ray in gastric diagnosis. It has given us such an exact method of determining these lesions that we are becoming somewhat lax in our efforts to arrive at a diagnosis by the history and physical signs alone. It is not within the province of this paper to discuss x-ray methods of diagnosis, since many papers by roentgenologists have placed first hand information at our disposal.

Carman, of the Mayo Clinic, states that of 47 cases of gastric ulcer coming to operation at the hands of the Mayos, 39, or 83%, had been diagnosed as such by radiologic signs. He states that the positive radiologic diagnosis of gastric ulcer can be based only upon the presence of one of two signs, namely, the niche or the accessory pocket; other signs which are corroborative but not diagnostic of themselves are (1) the incisura, (2) hour-glass stomach, (3) residue in the stomach after 6 hours, (4) lessened mobility, (5) localized pressure tender point (6) delayed opening of the pylorus, (7) acute fish-hook form of the stomach with displacement to the left and down, (8) gastric hypotonus, and (9) antiperistalsis. Carman describes the roentgenologic indications of duodenal ulcer also in two groups, major and minor signs. The major signs are: (1) gastric hyperperistalsis, (2) a residue in the stomach (sometimes in the duodenum) after six hours if there be obstruction from scar contraction, (3) a diverticulum of perforating ulcer. The minor signs are: (1) gastric hypermobility with early free opening of the pylorus and speedy clearance of the stomach, (2) gastric hypertonus, (3) irregularities in the

outline of the cap or bulb or of the duodenum, (4) lagging of bismuth in the duodenum, (5) pressure tender point over the duodenum, (6) spasms of the stomach such as hour-glass or slowly travelling incisura. We are not so much concerned, however, with the detail of x-ray findings as most of us will have to leave their interpretation to the experts in this field of work.

The question of greatest interest when considering the pathology of gastric and duodenal ulcer is, how frequently do these ulcers become carcinomata? To dispose of the latter first: primary duodenal cancer is rare; we have been able to find only one hundred and eleven cases reported in the literature. Whether or not the chemical difference between the duodenal and gastric juices is responsible for this comparative immunity of the duodenum we cannot say, although it would seem a possible solution. Gastric ulcers, however, undergo malignant change with comparative frequency. Many investigators have amply testified to this fact. Cruvelhier, in 1839, was the first to call attention to this explanation of the origin of many gastric carcinomata, and since that time Deiterich (1848), Rokitsansky, Futterer, Ssapeschko (1902), Stich (1903), Oettinger (1903), Jedlicka (1904), Wilson (1914), as well as others, have written on this subject. Estimates of the percentage of gastric carcinomata showing positive microscopic evidence of ulcer have varied from 26.6 (Jedlicka) to 90% (Ssapeschko). Wilson is of opinion that cancer rarely develops except on an ulcer base. The clinical observations of Mayo-Robson, who placed the percentage of cancers preceded by ulcer at 59.3, W. J. and C. H. Mayo at 71, and Moynihan at 72.1 support the observations of the pathologists. Therefore, in the face of all this evidence, we must assume that a fairly large per cent. of gastric ulcers do undergo malignant change. It is entirely reasonable to assume that this is so since we know that cancer developing elsewhere in the body is often preceded by inflammatory lesions, as, for instance, in the breast, lip, uterus, and prostate. It would seem that ulcers of the stomach situated elsewhere than at the pylorus do not undergo malignant change so frequently as those at the pyloric end. My father called attention to this fact as the result of clinical observation in 1900 and his opinion was confirmed later by the pathological work of Jedlicka.

In the light of this pathology, then, what is to be the operation of choice in dealing with gastric and duodenal ulcer? Again to dispose of the latter first, we can safely say that gastrojejunostomy in the hands of most operators has proven eminently satisfactory for duodenal ulcer. Furthermore, the accumulative experience of most surgeons is that it is unnecessary to do anything more than a posterior no-loop gastroenterostomy when dealing with duodenal ulcer since, after the operation has been correctly

done, these ulcers heal, and, as I have said elsewhere, do not as a rule undergo malignant change. On the contrary, they usually heal promptly, and, as the anatomy of the first portion of the duodenum, where ulcers are usually situated, does not make it rational to carry out resection routinely, it is fortunate that gastroenterostomy suffices so well. Pyloroplasty, first developed by Heinike-Mikulitz and later much improved by Finney, also has a distinct place in dealing with duodenal ulcers. Finney and Friedenwald have published comparative statistics of two series of 100 cases each, one being treated by gastroenterostomy, the other by pyloroplasty, and in their hands somewhat better results were obtained by pyloroplasty. But I believe the majority of operators will continue to find that a simple posterior, no-loop gastroenterostomy will be the operation of choice in dealing with duodenal ulcer.

On the other hand, the very fact that there are so many ways of handling gastric ulcers is evidence enough that there is no one way that can be called the operation of choice. About ten years ago surgeons generally began to feel that gastroenterostomy alone was not the ideal operation for gastric ulcer. Earlier failures were attributed to errors in technic, but it soon became evident that these would not explain all the disappointments. The anterior operation had given place to the posterior, the long loop to the no-loop (a step which did away with most of the regurgitant vomiting), and all mechanical helps in making the anastomosis to direct suture. Some few of the more observant clinicians began to suspect—what Cannon later proved in the physiological laboratory—that the stomach did not take kindly to two functioning openings, so that when the pyloric ulcers healed and the pylorus began to function again as well as the artificial stoma, the physiology of gastric digestion became seriously interfered with and the old symptoms of gastric disturbance returned. Then many different ways were suggested for permanent pyloric exclusion, so that one could choose between Von Eiselsberg's unilateral exclusion and various plication methods, ligature, etc., none of which answered the purpose for which it was intended, except Von Eiselsberg's. The pylorus soon became patulous again after any of the others. We have never practised pyloric exclusion and it is our belief that those who have done so either already have abandoned the method or soon will do so. It has seemed to us more rational to excise the ulcer-bearing area at the pylorus than merely to divide the pylorus and close each end.

Peptic ulcer of the jejunum following gastroenterostomy is a troublesome sequela of this operation. Much has also been written on this subject. Van Roojen collected 89 cases from the literature, 79% of which were in males. The condition occurred at all ages and the vast majority followed gastroenterostomy for benign

stenosis of the pylorus. It has been equally frequent following all types of gastroenterostomy. In a few instances the symptoms of ulcer developed almost immediately following operation. In others a long period of time intervened. The situation of the ulcer in over half of the cases was at or near the gastroenterostomy stoma.

The clinical course varied, since in some cases acute perforation occurred quickly, in others the symptoms ran a protracted course and resembled those of the original ulcer. Van Roojen feels that injury to the intestines at the time of the operation in the form of blunt trauma or from cutting instruments played a leading part in the etiology of this type of ulcer. He advises, therefore, extreme care so as not to injure the gut and that gastroenterostomy be followed by a prolonged period of ant-acid diet. In three cases of this series jejunal ulcer developed spontaneously; no operation having been previously done. Others have reported instances of jejunal ulcer following gastroenterostomy; thus Von Eiselsberg saw 8 instances develop in a series of 600 gastroenterostomies.

Claumont, Von Haberer and Boas, in writing upon this subject, have each attributed to hyperacidity a large share in the etiology of jejunal ulcer. Balfour and Carman report 13 cases of gastro-jejunal ulcer occurring at the Mayo Clinic. A study of these cases revealed the fact that no symptom or set of symptoms was pathognomonic. There was usually pain, very much the same in character as that before operation, although it was situated to the left of the mid-line and below the umbilicus. These authors think that this type of ulcer can nearly always be diagnosed by means of x-ray findings which may be divided into two classes:

- a. Those indicative of secondary pathology,
 1. Retention of six hour meal.
 2. Large size of stomach.
 3. Exaggerated peristalsis.
 4. Lessened mobility of stomach and spasticity.
- b. More direct signs pointing to the seat of the pathology.
 1. Deformity of contour about stoma.
 2. Deficient patency of stoma.
 3. Local irregularity of jejunal contour.
 4. Dilatation of the duodenum.

The pathology of these ulcers was fairly constant. In size, about 3 c. m., they actually involved the anastomosis with a tendency to spread to a greater extent on the jejunal than on the gastric side. There was induration of the entire line of the anastomosis, and adhesions to neighboring viscera were found. Subacute perforations of these ulcers was the rule and in one case a fistula formed between the stomach and colon. Strands of unabsorbable suture were found in 6 cases. There was no fixed plan of operative procedure in this series of cases. Wherever possible the ulcer was excised and the

gastroenterostomy opening enlarged. If this was not possible the anastomosis was divided and a Finney pyloroplasty done.

The operation of Balfour, burning out the ulcer by means of the Paquelin cautery, is useful in handling ulcers of the lesser curvature and has proven a valuable addition to surgery of the stomach.

Finally, in making a plea for still further adoption of the principle of pylorotomy for ulcer, or excision of the ulcer-bearing area, I can do no better than to quote my father: "Is it not, therefore, true conservatism to take into consideration potential dangers, such as hemorrhage, perforation, subphrenic abscess, disabling adhesions, and greatest of all, cancerous implantation upon the base of the ulcer, and to anticipate and prevent all by a radical operation, instead of doing one which may at most prove palliative, and that for a time only? The only way to view this difficulty, it seems to me, is to ascertain if a radical operation, which removes the lesion, can be instituted with less risk to the patient than that which is inseparable from the disease itself. In chronic ulcers there would seem to be no difficulty in answering this question, as a conservative estimate of the mortality following medical treatment, and admitted by medical authorities, is not less than 25 per cent. If we separate excisions and pylorotomies we find that the former yield a mortality of 1.75 per cent. (171 operations, 3 deaths) which is less than that following gastroenterostomy. Two hundred and five pylorotomies were followed by 18 deaths, or 8.7 per cent. It must be remembered that these statistics include all operations reported during the past fifteen years and represent the experience of many surgeons, some of whom have done very few operations. In 376 radical operations performed by all of the surgeons communicated with, the mortality was 5.6 per cent. or less than that from hemorrhage alone, and one-half that following perforation—not to mention the additional risks of subphrenic abscess, disabling adhesions resulting in hour-glass stomach, and that indefinite, intangible, but ever-increasing danger, malignant degeneration of the ulcer. So frequent is the last-mentioned complication that it would seem now the duty of the surgeon to remove the lesion when it is practicable and does not entail too great operative risk, for a considerable majority of those communicated with have expressed themselves most positively upon this point." We do not claim that it is possible, in every case, to remove the ulcer-bearing area safely; at times adhesions to neighboring viscera, as the gall-bladder, colon, pancreas, make it impossible to mobilize the pylorus. Then we must be satisfied with gastroenterostomy. But where it is possible, why not rid the patient of a disease which threatens his life by hemorrhage, perforation or malignant degeneration even after gastroenterostomy has been done? Many have expressed

themselves as in favor of the principle since it was first introduced in 1900. Such men as the Mayos, Mayo-Robson, Brewer, Gerster, Coffey, and many others have found it to be sound surgery. Certainly, in our own experience it has been most satisfactory and has added but little to the operative risk. There is still a 5 per cent. mortality from gastroenterostomy as an average from a number of the leading surgeons of America quoted above. The same men place the mortality from pylorotomy for ulcer at 8 per cent. The difference is too small to consider, in face of the fact that it is, in all probability, more than made up by deaths from hemorrhage, perforation and malignant degeneration following gastroenterostomy alone.

DISCUSSION.

DR. FRANKLIN W. WHITE: I have listened with a great deal of interest to the remarks of our distinguished guest.

It sometimes appears as if there were real differences of opinion between physicians and surgeons about the treatment of ulcer. These differences are not real. They are due almost entirely to the difference in the material seen. The earlier and simpler cases come to the physician; the later, more severe and more complex cases are selected for the surgeon to see.

The patients usually consult the physician first. Most of these are early cases; some late. Some should go straight to the surgeon; some need medical treatment. How shall we decide this? I shall mention only a few points. First we ask, Where is the ulcer—in the stomach or in the duodenum? This is important. The ulcer of the duodenum very rarely becomes malignant; the ulcer of the stomach changes to cancer more readily. We need not waste time trying to decide where the ulcer is by the symptoms. We can look and see where it is by the x-ray.

Second: What is the size of the ulcer? This is also important. Dr. McCarthy of the Mayo Clinic has found that ulcers excised from the stomach, whose crater was as large as a twenty-five cent piece, usually showed malignant change. The big ulcer should go to the surgeon; the smaller ones should have medical treatment first as a rule, even if they are in the stomach.

There has been a revolution in the methods of diagnosis of ulcer in the last few years. Take palpation. How little we can feel in comparison with what we can see with the x-ray! Tests with the stomach tube have taken their proper place, formerly considered very important, now always useful, but secondary. Tests for blood should be used not to diagnose ulcer, but to show how active it is, and help to rule out cancer by negative tests.

This is no time to speak of the medical treatment of ulcer in detail, but if the physician is to do his part, he must treat them early and thoroughly. The keynote to medical treatment should be the prevention of chronic ulcer. If we cannot prevent chronic ulcer we are likely to need a surgeon. The best way to heal an early ulcer is to be sure that the stomach empties promptly and remove the acid by the use of considerable alkali and sufficient food. A gastroenterostomy is effective just so far as it does both these things.

Thorough systematic medical treatment gives ex-

cellent results in the early cases. Dr. Sippy of Chicago has shown that moderate obstruction of the pylorus is no contraindication to medical treatment: actual permanent tissue narrowing occurs only in one in twelve or fifteen cases of pyloric obstruction. Edema and infiltration disappear with the healing of the ulcer. In duodenal ulcer, just as in diabetes, medical treatment must be systematic and thorough and prolonged. Both doctor and patient must "play the game." This is the only way to get good results in either of these diseases.

With regard to the "ulcer-cancer" question, the development of cancer upon a previous ulcer, we must remember that all our present data begin at the cancer end and shows what per cent. of excised cancers gave evidence of a previous ulcer. This has nothing to do with the per cent. of ulcers which become cancerous. For these figures we must start at the ulcer end. These data are very difficult to get and is a thing for the future. Most physicians believe that a rather small per cent. of ulcers, even of the stomach, become cancerous.

To summarize: all duodenal ulcers, except those which are perforated or bleed badly, or cause very marked obstruction, should have medical treatment first; small gastric ulcers the same; medium and large gastric ulcers should go at once to the surgeon on account of the danger of cancer. Thus the physician's part consists in giving the earlier cases thorough systematic treatment to prevent chronic ulcer if possible, also in sending all proper cases at once to the surgeon. In this way both the physician and surgeon work hand in hand for the best welfare of their patients.

DR. J. T. BOTTOMLEY: I agree entirely with the views of Dr. Rodman on the treatment of gastric ulcer. I believe that the ulcer should always be removed when possible, and that a gastrojejunostomy should always follow a resection entirely independent of the location of the ulcer and the manner of its removal.

I am not, however, in complete agreement with Dr. Rodman in his views of the treatment of duodenal ulcer. I do not believe that the pylorus should be resected in every case. In my experience it is only very rarely that hemorrhage from a duodenal ulcer occurs subsequent to gastrojejunostomy and we know that simple gastrojejunostomy gives an entirely satisfactory result in about 90% of our cases. These are sufficiently favorable statistics to justify our taking, for the present at least, the position that the added risk of resection is, as a rule, unwarranted.

One more point I would like to emphasize. The recent work of Rosenow has called our attention to the possibility that certain septic foci (as, for instance, in the teeth, the tonsils, the appendix, etc.) may have a causal relationship to gastric and duodenal ulcer. This fact should be kept in mind and such foci should be sought for and, if found, should be eliminated.

Then, too, the post-operative dietetic and drug treatment in ulcer cases is important. When we excise an ulcer, we remove only the end stage of a pathological process. Causal conditions and circumstances probably remain the same and must be combated by diet, drugs and improved habits. The internist must be brought into the campaign.

DR. F. B. LUND: In these cases we are confronted by the important question: Shall we resect (Rodman) or do a simple gastroenterostomy? Resection

in this sense means resection of the pylorus with the growth, closure of the duodenum and stomach ends, and posterior gastroenterostomy. These ulcers are the most interesting of all, because we cannot always tell whether they are benign or malignant. Early cancers are harder, have little white fibrous dots in the scar tissue close about them, and the involved glands are usually tender. Ulcers have a lot of induration about them, spreading down the duodenum and up into the pyloric antrum. The scar is yellowish often, and there are often fresh, slightly inflammatory adhesions to the pancreas; that is, in the typical cases.

It may be said that the more inflammation and spreading oedema (which means that the tumor shades off gradually without sharp edges) these cases have, the worse they may look, but the less likely will they be to be cancer. If this oedema extends down into the pancreas, excision will be difficult and attended often by hemorrhage from the small vessels about the head of the pancreas. When things look this way, a wise man does not excise, but does a gastroenterostomy. The patient rapidly recovers, and two weeks later the surgeon, if in any doubt, may re-operate, and when he does will often find the tumor has entirely disappeared, so an incision would have been an unnecessary risk. If the tumor is the same, or has increased, the surgeon may now resect, which is a comparatively simple operation when the gastroenterostomy is already performed. Lilienthal and others, in fact, advocate the two-stage operation in most cases of cancer. The objections to two-stage operations in cancer are: that sometimes after the gastroenterostomy is done, the growth may extend so close to its opening as to make an adequate resection at the second operation impossible; and that adhesions from the first operation may sometimes cause trouble for the second operation. In definite cases of cancer, it is only to be considered in cases where it is thought the patient would not stand the operation in a single stage. An excellent rule in doubtful cases, when one cannot tell whether the tumor is benign or malignant, is to excise always when the tumor is movable and not tied up so as to make excision risky. In clear cases of ulcer, don't excise; it is unnecessary. In clear cases of cancer, excise as a matter of course; it is the only hope of cure, nay, even of relief.

In regard to microscopic examination of a portion of the growth excised in order to determine whether to perform gastroenterostomy or excision, it seems to me that it gives us practically no assistance in these cases, for if we are going to excise at all, we excise well outside of the indurated area, and we operate between clamps without opening the removed portion of the stomach and exposing the operative area to infection. If we excise a piece of the ulcer for examination, we have to open the lumen and expose the patient at once to the danger of infection, and possibly deal with a bothersome hemorrhage. By the time the pathologist has his frozen sections cut and reported, we ought to have the stomach practically sutured.

Again, in cutting out a piece of growth for examination in case we are dealing with an ulcer which is malignant only at certain portions, we may not get one of the cancerous portions, and be deceived by the pathologist's report.

For these reasons, it seems to me that pathological examination of frozen sections at operation is of little value in deciding as to malignancy.

DR. A. W. GEORGE: The diagnosis by the Roentgen method, of chronic ulcer of the duodenum, offers very little, if any, difficulty. The Roentgen observations are as definite and precise as the common lesions of the long bones. This has been brought about by careful plate work. Fluoroscopic examination has offered very little help towards direct diagnosis. In fact, the reverse is true.

The differential diagnosis of chronic ulcer from adhesions involving the duodenum is more difficult. With chronic ulcer of the duodenum, after administering the bismuth meal and when the stomach begins to empty, the filling defect due to ulcer becomes more apparent. Conversely, with adhesions alone, as the stomach empties, the defect becomes less apparent. As a matter of fact, from a real practical point of view, if we pass the opinion that there is a pathological lesion of the duodenum, we have accomplished much.

The typical ulcer deformity in the first portion of the duodenum is practically due entirely to the connective tissue formation about the ulcer. It varies in all cases as will the size of the mucosal defect. In a series of 160 operative cases, no ulcer of the second portion of the duodenum was found with the exception of one case.

As long as we use the plate technic the diagnosis of chronic ulcer of the duodenum is practically 100 per cent. Errors arise from faulty technic and occasionally in the differentiation between chronic ulcer and adhesions. Of all the surgical lesions of the gastro-intestinal tract, that of chronic ulcer of the duodenum is by far the simplest to diagnose.

DR. E. A. CODMAN: I agree with Dr. Rodman's opinions about gastric ulcer, but not duodenal ulcer. It is hardly worth the extra risk to do a pylorotomy in those cases.

DR. D. F. JONES: I agree with all that Dr. Rodman has said in regard to excision of gastric ulcer. If I understood Dr. Rodman correctly, he said he believed in excision of duodenal ulcer also, because a considerable percentage perforated, or bled after gastroenterostomy. I cannot give the statistics for such complications in this community, but I feel certain that such occurrences must be very small, much smaller than the number which would die from the increased danger of the operation of excision in all cases over that of gastroenterostomy.

DR. WALTER DODD: There has been so much and such favorable reference made to the value of the Roentgen ray in gastric diagnosis, this evening, that I hesitate to attempt to add anything to what has already been said.

Dr. Rodman has called attention to the importance of early diagnosis in gastric cancer, and to the fact that very few cases are discovered early enough to be cured by surgery.

I believe that this point is a very important one and that with our present methods of examination we should be able to make such diagnosis.

During the year 1914 we examined at the Massachusetts General Hospital 730 gastric cases by means of the bismuth meal; of these cases, 75 were diagnosed as duodenal ulcer, 47 as gastric ulcer, and 97 as gastric cancer, leaving 511 in which no lesion was found in the stomach. It is now nearly a year since the last of these examinations were made. I have attempted to follow these negative

cases, several of them have been re-examined, and in so far as I am able to learn, only one has since shown evidence of gastric cancer. Nevertheless, the statement is true,—we are finding very few operable gastric cancers. It does not seem that we can be missing them. These patients do not have sufficient symptoms in my opinion, to make them seek help until the lesion has become inoperable, and it would seem that what is most needed is some such method of education as has been carried out in the treatment of phthisis.

The criticism usually made by the general medical profession of the Roentgen method in gastric examinations of the stomach is not that it is inaccurate, but that it is too exclusive to be applied as a routine procedure.

The fluoroscopic method of examination offers a means of eliminating this criticism and has made possible the general use of the Roentgen examinations even in free hospital clinics.

During the past two years we have examined about 150 cases upon whom gastroenterostomy had been performed; in practically all of these cases where the pylorus was not closed at operation, the stomach contents were seen to leave by it as well as by the gastroenterostomy opening.

From these findings one might conclude that it is advisable to close the pylorus, in case of duodenal ulcer, at least.

DR. RODMAN (closing): I would say that I am very much indebted to the members for the full, fair, and generous discussion of the subject. I am absolutely in accord with Dr. White. I wish to say that all acute ulcers are strictly medical and should be so considered. Some of the mild chronic ulcers should be treated for a time and if they fail to respond, I believe they should be turned over to the surgeon.

I wish only to express again my indebtedness to the Roentgenologist for making this work easier. I believe that with the aid of the x-ray we can very nearly determine in advance what is the procedure of choice.

I again wish to thank you.

Address.

THE PRACTISING PHYSICIAN AND THE PUBLIC HEALTH.*

By MERRILL E. CHAMPTON, M.D., C.P.H., WOLLASTON, MASS.

State District Health Officer.

APPRECIATION of the need of measures directed towards the preservation of the public health may be traced back to very early times. That first great sanitarian, Moses, established a code of public health laws some of which have not been thoroughly put into practice even yet. Sewage disposal, while not the problem it is in this day of large cities and towns, nevertheless merited, and received, attention. Thus we read that the Children of Israel were commanded:

* Read before the Norfolk South Medical Society, Feb. 1, 1917.

"Thou shalt have a place also without the camp whither thou shalt go forth abroad; and thou shalt have a paddle upon thy weapon; and it shall be, when thou wilt ease thyself, abroad, thou shalt dig therewith, and shalt turn back and cover that which cometh from thee."

If the people of the warm countries and of our own South were to obey this injunction to-day, a very large part of the suffering and economic loss entailed by the prevalence of hook-worm disease would be obviated.

It will be noted, however, that in those early days the sanitarians were not physicians but priests or lawyers, and as we glance down through the centuries since then, we find that the physicians who rose to eminence did so because they made great discoveries in anatomy or physiology, or because they were skillful surgeons, rather than because they originated and enforced wise provisions for the prevention of disease in the many.

One reason for this was that the true cause of our worst plagues was not even guessed at. If the cholera or the bubonic plague were inflicted upon men for their sins, then the only rational prevention was to pay closer attention to the rules of the church. If malaria came from breathing the night air, the proper thing to do was to sleep with the windows closed.

The development of the microscope and the advent of the germ theory of disease changed the face of things materially, though the new ideas were slow in gaining a foothold; and indeed they have not yet penetrated the minds of certain physicians who are yearly much in evidence before legislative committees; physicians who deny the benefits of vaccination, of diphtheria antitoxin and other such obvious things. It began to dawn upon people that disease could be prevented as well as cured. It began to be realized that disease is the result of ignorance and carelessness rather than of sin, and implies not an angry God but an ignorant man. Upon this foundation began to be reared a system of preventive medicine. Comparatively early, however, certain far-seeing men grasped the principles of prevention in a way which now, in retrospect, seems marvelous. These men were not physicians. In 1849 the Massachusetts Legislature appointed a commission to study the question of public health and to bring in recommendations. This commission, often called the "Shattuck Commission," after Lemuel Shattuck, one of its members, brought in a report which stands out as a great human document and is worthy of the careful study of every citizen of the Commonwealth. Various recommendations were set forth in their report, some of which, although sound in every way, have not been put in force to the present day. Two of the most important recommendations made were those to establish a state board of health and local boards of health; it was twenty years later before a state board

of health was established. I venture to quote the wording of the preface of their report: "We believe that the conditions of perfect health, either public or personal, are seldom or never attained, though attainable; that the average length of human life may be very much extended, and its physical power greatly augmented; that in every year, within the Commonwealth, thousands of lives are lost which might have been saved; that tens of thousands of cases of sickness occur, which might have been prevented; that a vast amount of unnecessarily impaired health and physical debility exists among those not actually confined by sickness; that these preventable evils require an enormous expenditure and loss of money, and impose upon the people unnumbered and immeasurable calamities, pecuniary, social, physical, mental and moral, which might be avoided; that means exist, within our reach, for their mitigation or removal; and that measures for prevention will effect infinitely more than remedies for the cure of disease."

With this hastily sketched background, let us consider the place of the practising physician in the scheme of public health protection. For all practical purposes, we have four factors to deal with: the people, their private physicians, the local board of health, and the State Department of Health. Or, arranged a little differently, the family physician and his clientele; the local board of health and the people and physicians of the town; the State Department of Health and the different boards of health, physicians and people of the State.

Let us briefly outline the part the various factors should play. The public—the most important part of all, naturally—determine who shall be their physicians, their boards of health and ultimately their State Department of Health. The local boards of health are entrusted by the people with the power to make and enforce reasonable regulations for the protection of the public health, and these regulations are binding on laymen and physicians alike. The State Department of Health plays the rôle of expert adviser. It accomplishes its results, as a rule, by persuasion and argument, rather than through coercion.

The practising physician, however, is at present the all-important factor in the protection of the public health. All the others have to rely on him for a great measure of their results. How has he met this responsibility?

On the whole, I fear the answer to this question must be made that he has not risen to the full measure of his opportunities. The physician is, by training, an individualist and something of an autocrat. He thinks in terms of family rather than of community. His dictum on medical matters is accepted as final by many of his patients and, of course, listened to with respect by all. The many details of private practice tend to concentrate his attention on the cure of the ailments of his own clientele, and he takes it

for granted that his brother practitioner is doing the same for his clientele. This attitude too often results in a certain narrowness of outlook; the foreground is so sharply defined that the background is lost sight of. It means a vast number of units working independently of each other and with very little correlation.

For the time being, the interests of the patient—that is, of the man who is paying him—are all important in his eyes. He is apt to forget that his doctor neighbor's patient, in the larger point of view, is of equal importance. This attitude of mind makes it possible for tremendous pressure to be brought to bear under certain circumstances, as, for instance, in the matter of release from quarantine. I have known a physician to yield many times to such pressure and to certify that his patient was ready to be released from quarantine when his best judgment could not approve such a step.

Let us see if we can define clearly what should be the relative duties of physicians and boards of health in this matter of public protection. In the first place, the law lays upon the boards of health the duty of making regulations and enforcing such regulations for the protection of the public. This includes control of quarantine and isolation in all cases of communicable disease. The treatment of the individual case has to do entirely with the family physician. The control of quarantine and isolation and its termination has, one might say, really nothing to do with the family physician. These matters are the functions of the board of health. Right here I will say, however, that the board of health is dependent in the greatest possible measure upon the hearty coöperation of the family physician. Unfortunately, in many cases, either because of feelings of professional jealousy or differences of various kinds, the family physician supports in a lukewarm manner, or perhaps even directly opposes, the board of health. The family, in turn, is quick to know this and rebels against all restrictions. The result is bound to be unfortunate for the public at large. Adequate isolation and quarantine are not enforced and foci of disease are established, to stamp out which may take much time and money, and which may even result in the loss of valuable lives. Examples of this are easy to find. One instance may be mentioned where a grown man was suffering from an eruptive disease. He was seen by his physician on the street; the physician made an off-hand diagnosis of chicken-pox and did not even report it. The sequel of it all was an epidemic of smallpox. Another physician had a case of discharging eyes in a small baby. It did not look like gonorrhea to him so he asked to be notified by the family if the eyes did not clear up under the treatment he had ordered. He did not report the case, regardless of the fact that the law says that *all* reddened, swollen or discharging eyes shall be reported, whether of gonorrheal origin or not. The next heard of the case was that the baby's eyesight was seriously

impaired. Instances such as these in the case of other diseases could be multiplied *ad infinitum*, and constitute a serious breach of trust with the individual patient and with the public.

In what way can the local board of health and the State Department of Health help the practising physician in his fight against disease and in his attempts to protect the public health? Many ways come to mind at once. The local board of health, by the authority conferred upon it by law, can render much easier the task of the family physician in maintaining proper control over communicable diseases. The local board of health can render it possible for him to get his patients, rich or poor, into the proper communicable disease hospitals. It should also be able to furnish him with invaluable information regarding the prevalence of disease in the community. In many instances it does furnish him with laboratory service for the diagnosis of communicable diseases.

The State Department of Health, on the other hand, can likewise furnish him with much assistance. It is the duty of the state to furnish expert advice on all matters which have to do with the life and health of the citizens of the Commonwealth. Its sailing orders, in the words of the law, state that:

"Said board shall take cognizance of the interests of health and life among the citizens of the Commonwealth, make sanitary investigations and inquiries relative to the causes of disease, and especially of epidemics, the sources of mortality and the effects of localities, employments, conditions and circumstances on the public health, and relative to the sale of drugs and food and the adulterations thereof; and shall gather such information relative thereto as it considers proper for diffusion among the people. It shall advise the government relative to the location and other sanitary conditions of any public institution; and shall have oversight of inland waters, sources of water supply and vaccine institutions, and may, for the use of the people of the Commonwealth, produce and distribute antitoxin and vaccine lymph and such specific material for protective inoculation against typhoid fever and other diseases as said board may, from time to time, deem it advisable to produce and distribute. It shall annually examine all main outlets of sewers and drainage of cities and towns of the Commonwealth, and the effect of sewage disposal, and shall annually report thereon to the general court, with such recommendations for the protection of the interests of persons and property and for the prevention of offensive odors and objectionable conditions as it considers expedient."

This Department will inform him concerning the occurrence of disease throughout the State. It will give him information regarding the State's health laws. It will furnish him with diagnostic assistance in communicable diseases at no cost to himself or to his patient, and with laboratory assistance, such as examinations for diphtheria, typhoid fever, malaria, etc. It will do for him free Wassermann tests for syphilis. Moreover, the State offers the physician various agents used in the prevention and treatment of

certain communicable diseases: diphtheria antitoxin, serum for the treatment of cerebrospinal meningitis, typhoid vaccine, smallpox vaccine. All these things are free to any reputable practising physician.

What does the State ask in return for these things which she furnishes to her citizens free? In the first place, she asks that the physicians report promptly all cases of communicable diseases, births and deaths within their knowledge. She asks these things, but she does not always get them. Physicians are often very careless about reporting births, sore eyes in babies, and communicable diseases in older children or adults, yet the health authorities of both town and State are powerless to control disease, the existence of which they are unable to ascertain. They are powerless to estimate the infant mortality if they do not know how many babies are born. They cannot tell whether or no an epidemic is threatening from a given milk supply if the practising physician in charge of each individual case of disease is careless about reporting the milk supply of each of his cases of communicable diseases. I recently looked over 120 reports from physicians in one city, and from that number only 26 gave the name of the milkman supplying milk to the infected families, although the space for such a report was clearly indicated on the card.

Tuberculosis is a poorly reported disease, although it is of the utmost importance. Physicians, seeing a case of the latter disease, frequently take it for granted that it has been already reported because it has been seen previously by some other physician. The law does not contemplate taking anything for granted. Better that a case be reported four times than that it be not reported at all. The State Department of Health has a system whereby cases reported more than once are not counted more than once, so that multiple reports do not vitiate our statistics.

Finally, the State has a right to ask that the physicians be the first to support all matters which tend to promote the health and happiness of the citizens of the Commonwealth. How can this best be done? The physician should be the adviser of his families, not merely in times of sickness, but in times of health. He should give more thought to the prevention of ailments, while not relaxing in any way his endeavors towards cure when ailments do appear. This may sound Utopian, but as a matter of fact it is not so. We all know in what a state of flux the public mind is at present in medical matters. Many people are becoming distrustful of the old measures of treatment, and they are taking more interest in prophylaxis. They read in the newspapers articles on the cause and prevention of disease—information they too often do not get from their family physician. The old type of family practitioner is said to be gradually disappearing, and it is greatly the fault of the medical profession itself. On the other

hand, I listened not long ago to a paper by a Boston physician in which he described an experiment which he has been carrying on for a year with some fifty families. They consider him their family physician, and call him when they get sick, but he feels disappointed if they have to call him often for that reason. His great work lies in the direction of prevention. He makes careful examination of his patients while they are well, visits them while they are well, and does his best to keep them well. I feel strongly that this is the inevitable outcome of the changes taking place at the present time. Only in this way will the physician be able to cope with conditions arising from the newer forms of social thought, such as health insurance, for example.

To sum up the gist of our subject, the family physician should be the strongest ally which the board of health has. He should work hand in hand with the board, should see that the best representatives of the profession get on the board of health, and that they get adequate compensation for this work. He should work for the appointment of trained, full-time health officers in the cities and towns; he should work for the employment of public health nurses; for an adequate water supply, sewer system, and milk inspection. He should realize that his greatest function is to be the adviser of his families in *all* things which pertain to their physical and mental welfare. He should learn to think in terms of community as well as in terms of family.

Clinical Department.

REPORT OF A CASE OF CONGENITAL ANOMALY OF THE LARYNX.*

By GEORGE H. POWERS, M.D., BOSTON.

STENOSSES of the larynx and upper trachea from congenital anomalies are quite rarely seen, although of frequent occurrence as a result of contracting cicatrices following destructive inflammatory processes commonly seen in diphtheria, syphilis and tuberculosis. The congenital stenosis is usually found to be a web of fibrous tissue situated between and adherent to the vocal cords, such opening as is present being at the posterior commissure. Diagnosis by means of the laryngoscopic mirror is, under ordinary conditions, a simple matter, but if impracticable, as in an infant, direct examination under anesthesia should be conclusive. The literature upon this subject, beyond the fact that there are found in this region anomalous membranous diaphragms, is rather scanty. Treatment consists in two methods, operative and by slow dilatation. Of the former, two routes are open,—the intralaryngeal attempt to cut away the obstruction

* Read at meeting of Boston Obstetrical Society, Feb. 27, 1917.

following with dilatation, and externally opening the larynx in the median line for the complete removal of the superfluous tissue. The latter method is a last resort on account of the probable permanent impairment of the voice. A great variety of dilating instruments has been described, both for intra-laryngeal use from above and for intra-tracheal use from below through a tracheal opening. Several forms of the latter are constructed for attachment to the tracheotomy tube, the dilator projecting upward through the trachea and even through the larynx, according to the site of the lesion. The case here reported presented some very peculiar, and to me, unusual, features:

Immediately after birth the infant had no apparent respiratory difficulty, although a peculiar inspiratory sound similar to the cooing of a dove, was noticed. Labored breathing was not observed until some twelve hours later. Dr. Richard M. Smith was called in consultation on the next day, and after a thorough examination a persistent thymus was most seriously considered. A subsequent roentgen examination of the chest was negative in this respect.

On Tuesday, June 27, when the infant was about 36 hours old, the respiratory difficulty became very alarming; the breathing became progressively more labored, and the respirations more shallow, until the baby was utterly exhausted and cyanotic. Throughout the previous 24 hours, during periods of crying, respirations were much deeper and the cooing sound much more pronounced. At the time of the writer's first examination the baby's physical condition seemed desperate; the pulse was racing at 180, at times being almost uncountable; respirations were shallow, labored, and from 60 to 80 per minute; marked cyanosis was present. Any laryngeal examination or procedure was considered out of the question, and tracheotomy under slight ether anesthesia was at once done. Unfamiliarity with the soft trachea, as yet practically without cartilaginous development, of an infant but little over 36 hours old, added considerable difficulty to this simple operation, the trachea being so soft that great difficulty was found in holding it with sufficient firmness to permit of an incision. Immediately upon insertion of the tube, however, the breathing became deeper and the cyanosis gradually lessened. For the succeeding four days respirations were at times very irregular, varying from 40 and upwards to Cheyne-Stokes; this may have been due in part to exhaustion and insufficient oxygen. No further attempt at diagnosis was considered practicable until such time as the patient's condition would permit of surgical procedure. The subsequent tracheotomy history of the baby was uneventful, as evidenced by the weight table.

After a weekly gain for several weeks of 6-7 ounces, on Oct. 10 the baby, then some 3 1/2 months old, was etherized and the larynx inspected by direct examination, but with some difficulty on account of a great quantity of mucus and a very soft, flabby epiglottis. No abnormality was found above the vocal cords, which were normal in appearance, closure and excursion; but below the glottis no tracheal lumen was seen, there being visible just below the cords what appeared to be a flat diaphragm of normal mucosa corresponding in color

with the false cords. A long pair of round-pointed nasal dressing forceps was now introduced through the larynx, pressing gently into this membrane, and gradually opened in line with the slit of the glottis to about 1/3 inch and the process repeated at a right angle. Considerable bleeding interfered seriously with further examination, but great improvement in breathing was noticed, which obtained for 20 minutes before the tracheal tube was replaced, during which time the wound was kept closed. Respiration now appeared normal, except for the presence of mucus and blood in the trachea and larynx, which fact was taken as definite proof that the obstruction consisted solely in this thin membranous diaphragm.

The tracheotomy tube was now replaced, and it was decided, if possible, to introduce, at the occasions of removal of the tube for cleansing, a pair of thin curved forceps upwards through the tracheal opening to the site of the obstruction, for the purpose of stretching the membrane as before. This was done at intervals of 2-3 days, by Dr. Charles O. Day, the family physician, for nearly three weeks, each dilatation causing a slight bleeding, but no more apparent discomfort to the patient than removal and replacement of the tube. During the absence of the tube on these occasions, great improvement in breathing through the normal channel was noticed. After the last dilatation on Oct. 29, the tracheal tube was not replaced for a half hour, during which time the little patient appeared quite happy, breathing deeply and with perfect freedom. Two days later the tube was permanently omitted, and a dressing applied over the tracheotomy wound. Respiration was apparently perfectly sufficient and normal, excepting the slight sounds caused by mucus in the trachea, to control which minute doses of atropine for about a week's time were necessary.

During this last visit the webbing together of the second and third toes of both feet was brought to my attention. This had so far escaped notice, and the discovery brought out the fact that this condition has been more or less common in the maternal family tree. The incident of the webbed toes was very interesting, for at the time of the tracheotomy, upon being pressed for a possible explanation of the obstruction, my guess was a web across the larynx or trachea, which I likened to the not uncommon condition of webbed toes. My remark, however, at this time of excitement, brought forth no recollection of this family trait.

Medical Progress.

TWELFTH REPORT OF PROGRESS IN ORTHOPAEDIC SURGERY.

By M. S. DANFORTH, M.D., ROBERT SOUTTER, M.D.,
C. H. BUCHOLZ, M.D., H. C. LOW, M.D.,
R. B. OSGOOD, M.D., BOSTON.

TUBERCULOSIS.

WHITBECK,¹ in reporting the work for ten years at the Sea Breeze Hospital, calls attention to the fact that this is practically the only institution in America where the treatment of surgical tuberculosis can be continuously carried out for any length of time. Since 1904, 262

cases have been treated at this hospital with the most satisfactory results. They have been able to discharge a great percentage of cases cured, and also many of the cases discharged improved have shown continued improvement afterwards. The orthopaedic treatment has been conservative, and the hygienic treatment radical. They have had every advantage of fresh air, salt water, and sunshine. Heliotherapy, they feel, has been a great advantage.

(Ed. Note.—The good work done there emphasizes the need of other institutions of a similar nature.)

Campbell² reports 16 cases of tubercular bone and joint affections in which general heliotherapy has been carried out with much consideration of detail, and in a fairly thorough manner; in fact, he has probably carried out general heliotherapy as well as the conditions permitted. His results have been very satisfactory, and his conclusions agree with those of most other observers in regard to the hastening of the expulsion of sequestra and the early beneficial effects in severe septic conditions, with a rapid healing of the sinuses. He believes that a cure is obtained in a much shorter time by this method. He has tried as much as possible to give up all encumbering apparatus, and has used only a frame or light movable splint, which has allowed a thorough application of heliotherapy.

(Ed. Note.—Each new series of cases carefully treated by this method helps to show its value as an adjunct in the treatment of surgical tuberculosis.)

That thorough orthopaedic treatment of tuberculous deformities of the hip and spine will give very satisfactory results is demonstrated by the work of Gauvain.³ The necessity of a long-continued treatment is shown. He had every advantage of time and of hygiene in his work. Forcible correction was resorted to in certain selected cases, and of course this is justifiable only where the duration of treatment is limited only by the needs of the case and where the hygienic conditions surrounding the patient are excellent. The results in all his cases seem satisfactory.

The changed character of the lesions in certain cases in which, following characteristic tuberculous disease of the bone at an early age, there has been an absence of symptoms for five or ten years and then a recurrence of pain, is shown by Horwitz's⁴ study of three cases. In these cases, after an absence of symptoms for five to ten years, pain associated with activity of the joint began to recur. Joint motions became limited, and there was slight tenderness and some referred pain. The x-ray showed old necrotic bone and some new bone formation. Horwitz advises treatment by manipulation and massage, *i.e.*, quite the opposite of that he recommends in an earlier stage of the disease.

(Ed. Note.—It seems to the editors that a

very careful study of these cases must be made before such treatment as that advised would be justifiable.)

The studies of Paus⁵ reaffirm the necessity of considering tuberculosis as always more than a local affection. In fifty cases with bone or joint tuberculosis, he found by animal inoculation tubercle bacilli in the blood. Multiple foci were very common, especially in the skin, various bones or joints, tendon sheaths, bronchial or other glands, intestines and meninges, and air passages. He considers that a focus once established can never be considered cured unless it is removed, and Silfverskiöld⁶ brings up once more the question of extirpation of a focus in tuberculosis of bone in the early stage. He believes that by opening into the focus and tamponing it with gauze impregnated with some irritating substance, as camphor-naphthol, the tissues will be stimulated to defend themselves against the infection.

(Ed. Note.—This or similar methods have been advocated from time to time, but for the most part have been abandoned after further study by the very men who originally advocated them.)

ARTHRITIS.

The necessity of searching for the focus of infection in cases of arthritis is pointed out once more by McCrae.⁷ His suggestion, that other non-arthritic foci than the original one may cause a continuance of the arthritis, is of value.

RICKETS, ACROMEGALY, ETC.

Schloss,⁸ who is making an extensive series of experiments on 14 infants, has come to the conclusion that there is no benefit from the addition of straight phosphorus to the cod liver oil, hence he has dropped the phosphorus from the treatment of rachitis. Neither calcium alone, nor cod liver oil alone, displayed any special efficacy, but the combination of the two with breast milk gave the most favorable results, both during the treatment and after its suspension. The calcium, in the form of decalcium phosphate or tricalcium phosphate, seems to give the maximum effect.

The report by Kahlmeter⁹ of the case of a man of 45, who died from adenoma of the pituitary body, of ten years' duration, but who had no evidence of acromegaly, indicates that not all tumors of the pituitary body cause acromegaly.

(Ed. Note.—The article does not state, and one may well suppose that the tumor did not involve the part of the pituitary body concerned with the development of acromegaly.)

Wegelin,¹⁰ in Berne, where almost all children are born with some goitre, in studying the cadavers of children still-born or dying soon after birth, has found some abnormal ossification, as, for instance, an absence of the center of ossification at the lower end of the femur. He believes that this abnormal process is due to abnormal functioning of the thyroid, and be-

lieves that, at least where goitre is endemic, thyroid treatment is advisable for disturbances of ossification.

FRACTURES.

Bandit,¹¹ in a very careful article on fractures of the astragalus, reviews the literature and discusses the x-ray appearances. Direct violence is regarded as the cause of the fracture. The author describes the mechanics of the fracture and makes a careful differentiation of the symptoms in cases of fracture of the neck and of the body, with and without displacement. In diagnosing he lays particular stress upon the varus position of the foot. The cases may be treated by: (1) simple reduction; (2) reduction by the open method; (3) reduction by reposition of the fragments; (4) astragalectomy. Wherever possible, after x-ray examination, he prefers the first method, although the other methods have their place in certain cases.

(Ed. Note.—In fractures of the astragalus, the astragalo-calcaneo articulation is very commonly involved, and its functions seriously impaired. As the flexibility of the foot depends upon the normal functioning of this joint more than any other, the maintaining of the proper weight-bearing line in fractures becomes of supreme importance.)

Brickner¹² gives as his method of securing full abduction and extension of the shoulder in cases of fracture of the greater tuberosity of the humerus, the fixation of the hand of the patient to the head of the bed, and the placing of the patient on a reclining rest or pillows, so that he may gradually slide down or the arm may be slowly pulled up. This seems, in his hands, to be a very satisfactory method, judged by the results, but it necessitates remaining in bed in one position.

(Ed. Note.—We have found that plaster casts or some form of splint holding the shoulder in abduction, may be made to fit properly without being very cumbersome, and think that this method offers a more sure and satisfactory way to treat these cases.)

In the treatment of irreducible joint fractures Robinson¹³ shows how, by a simple procedure of fixing the bones by driving in an ordinary wire nail, the intractable fragments can be held in place. In an emergency where bone plates are not available, one must then resort to this method; also, the cases reported show results which suggest that it may be true that there are certain types of fracture near the joint on which it is difficult to use plates, and also not advisable on account of the interference with joint motion, in which this might be the operation of choice. The fixation of fracture with nails of silver or of the ordinary wire type is a simple method, and one which causes very little destruction of bone tissue. The choice depends on the x-ray picture, and the difficulty of correction of the deformity.

A group of four papers by Connell and

Freyer,¹⁴ Hernaman-Johnson,¹⁵ Lane,¹⁶ and Taylor¹⁷ in the *Practitioner*, show very clearly, both by clinical description and excellent x-ray pictures, the development of the bone plate in fracture surgery, and the results are surprisingly satisfactory.

We must realize that many of these cases are infected, and that the bone is often shattered in several places, and the gaining scale in the application of these plates is to be especially commended.

We may consider the conclusions drawn by Lane, at the same time recording certain exceptions that the other authors make. Lane says that it is only on very rare occasions that one should try to fix the bones by the means of plates and screws while the wound is very foul. Taylor does not believe that the use of the plate should be attempted in septic cases. If possible, all plating should be postponed until the septic process has been healed. If, at the time of operation, a hidden focus of sepsis is found, effective drainage must be maintained, and the bone plates used should be long enough to allow the screws to be applied as far as possible away from this area. Often a definite gain in the length of the limb can be obtained, and with this point in view it is not necessary to bring the whole area of the broken ends in apposition, since the interval would often fill up, and the callus can be stimulated by inserting fragments of bone.

In these cases, which are liable to be much earlier ambulatory than those in civil life, it is necessary to use much heavier steel plates; in fact, those used now are three times as heavy as those in use before the war period.

Of course Lane lays special importance on the prevention of stiffness of the joints, relying upon the security of the plates, which are made secure by as many screws as it is possible to insert. He begins motions, especially in the lower limb, as soon as any acute swelling has disappeared. Early attempts at walking with a firmly supporting splint stimulate the deposit of bone at the seat of the fracture.

Various methods of bone graft may be used to bridge over the intervening space between the fragments. Lane does not believe that bone grafts alone offer sufficient fixation, and thinks that the many failures of this method are due to the unsatisfactory grip which the graft may have upon the fragments of the shaft. Bone grafts are a great help in bridging the spaces between bones which are firmly immobilized. Lane does not believe that any number of screws properly applied to hold the bone plate in place produces a harmful rarifying osteitis.

The sepsis, which is a great obstacle in these cases, is often successfully treated by autogenous vaccines. A hemorrhage, which is often great, is best controlled by hemostatic forceps, which may be left in the wound, and ligatures are rarely used.

Sever¹⁸ and Hartwell¹⁹ in their papers upon fractures of the spinal vertebrae, call attention to the frequency of the occurrence of the type of fracture, and the importance of its early recognition and treatment. Sever gives a study of seven cases of fracture of the lumbar vertebrae. To within a short time these cases would probably have passed as severe back strains or hypertrophic changes in the spine. The diagnosis in these cases is often very difficult, but it is of the utmost importance for the successful treatment. They may be caused by direct or indirect violence, and the nerve symptoms due to pressure upon the cord may be present at the beginning, but are most often late or entirely absent; the lesser signs of pain and localized tenderness, often appearing three or four weeks later, are quite important. At this time the diagnosis can be made only from the x-rays. Fixation in a plaster jacket or on a Bradford frame, according to the severity of the case, should be carried out for at least six months. Where there is evidence of injury to the cord a laminectomy should be done with little delay.

Hartwell has studied those cases of fracture of the spine which show none of the characteristic symptoms associated with lesions of the cord. There are often only the moderate signs of back strain at first, and the chief symptom is a persistent localized pain in the back, which grows worse month after month. This steady pain in the back, unaccompanied by any neurological symptoms, should lead one to study the x-ray pictures very carefully, and whether or not there is a history of a fall or severe injury. Localized tenderness over the spinous processes or a disalignment of these processes is the most characteristic symptom. Hartwell does not state whether, in his opinion, the treatment should be by plaster jackets or by a bone graft.

(Ed. Note.—In our experience, a bone graft applied to the spinous processes in those cases which show a persistence of the pain and disability has proved a most satisfactory method of treatment, and has permitted an early return to active life.)

BONE REGENERATION AND TRANSPLANTATION.

Dobrovolskaia's²⁰ experiments with proliferation of bone tissue in the test tube showed that it is possible to obtain an abundant growth *in vitro*, including the endostium, haversian canals, bone cells, etc. The proliferation of osteogenous elements of the cortical substance of the transplanted bone deprived of periosteum gives rise to formation of osteogenous tissue, but this occurs with greater energy when the transplanted bone is not deprived of its periosteum. The newly-formed bone becomes solid only when it grows to blend with the basal bony tissue. The proliferation and further growth of osteogenous elements are facilitated by the presence of a fibrinous blood clot. The practical conclusion is to guard carefully the smallest frag-

ments, in case of a fracture non-complicated by suppuration, and in case of the latter, to remove them as late as possible in order to give the body a chance to utilize them as construction material.

(Ed. Note.—Clinically, these laboratory findings are most notably confirmed by the results obtained in the very extensive compound comminuted gunshot fractures. Fred T. Murphy, in an unpublished communication, has shown that in those cases in which the fragments have been removed, non-union has been very frequent; whereas, in those in which the minutest fragments were left, speedy union has been obtained almost invariably.)

Tongu²¹ has made experiments on dogs and rabbits to study the effect of the injection of periosteum and bone marrow. The osteoblasts prove most active when an emulsion of periosteum had been injected or transplanted. They were less active when a segment of bone marrow was transplanted, and least active after an injection or transplantation of an emulsion of bone marrow. The newly-formed bone tissue resulting from the transplantation of periosteum and bone marrow was gradually destroyed by the osteoclasts, disappearing completely in time.

Hawley,²² in "A Contribution to the Fate of Bone Grafts," reports six cases in which he has tried a new method of applying a bone graft. The results have been principally interesting because the grafts were applied in a site that could be easily studied by the x-ray. He has used the graft in paralytic deformities of the ankle; in cases of equinus, he has placed it on the posterior surface of the ankle joint in order to lock the plantar flexion. It was generally carried well down into the os calcis. In the calcaneo deformity, the graft has been inlaid in front of the joint in order to check the dorsal flexion. The operation was successful in all six cases, healing with first intention, but the two adults complained of pain for some time.

Functional results in all six cases were failures because the graft did not hold, and there was a dissolution of it in every case. Those parts of the graft inlaid in the bone remained alive and strong, while those parts on the joint line disappeared. Hawley does not try to explain these conditions by anything more than theories. He thinks that these failures show some limitations in the field of bone transplantations.

The results in 40 cases of bone grafting for spinal conditions was shown in a report by Rugh.²³ There was no death. One of the cases was cervical tuberculosis, fifteen dorsal, nineteen lumbar, and three in the sacral region. The presence of abscesses, paralysis or irritability of the cord did not contraindicate an operation. One case with pulmonary tuberculosis showed poor result. In one case there resulted a fracture of the graft; in another case the

graft was lost; and in a third case there was a fracture of the tibia. The average length of time that the patient remained upon the back was 6 weeks, and the average time for wearing a support was 6 months. The result in 26 cases was excellent; 5 cases were improved; 2 were unrelieved; the others have either not been heard from or died from intercurrent disease.

(Ed. Note.—The author's aim evidently has been that expressed by Lange, to put a brace under the skin and to shorten the time of recovery. We feel that the average length of time in which the patient was restricted, either on his back or with a brace, should be longer than the author suggests. In certain cases of active and extensive tuberculous disease they have broken out afresh after bone grafting.)

WAR SURGERY.

Osgood²⁴ presents a paper on "Orthopaedic Work in a War Hospital," which is interesting to us from various points of view. In the first place, it shows the value of an orthopaedic service in a war hospital, a thing that was at first considered to be doubtful. This service in a war has added much not only to the knowledge of orthopaedic surgeons, but it has also shown how useful these principles may be, and has brought this fact to the attention of the general surgeon. The great variety assigned to the orthopaedic surgeon offers proof of the value and the appreciation of their work.

Osgood's article also shows to those who are working all the time in orthopaedic surgery a number of new principles used in splinting these emergency cases, which could be made of practical use in our routine work. It is often that we forget the extent to which the different forms of splints may be developed, and do not avail ourselves of the wire mesh, the perforated metal, or the thin aluminum sheets which are so easily adapted to fit individual cases. His very ingenious and adaptable Thomas splint, made of Shelby tubing, which can be adapted to meet almost all emergencies, is something that we should keep in mind.

The article should be carefully read and the illustrations studied in order to appreciate his adaptations of apparatus to support the shoulder, the hand and the foot, and his descriptions of the use of plaster of Paris, reinforced with metal strips so that large fenestra may be left for the observation of wounds.

The broadening of the scope of orthopaedic surgery is shown by the inclusion of nerve surgery in a paper on War Orthopaedics by Hohman, Lange and Schede.²⁵ In several cases operated upon by Hohman, there was beginning restoration of function five or six weeks after the operation. Lange states that when suture of the nerve does not lead to restoration of function, much may be hoped for from transplantation of tendons. Their paper suggests that the reason of the violent reaction in a joint mobilized under an anesthetic is the hemorrhage

that occurs into the joint, and that this may be avoided by the use of an Esmarch bandage.

The need in certain cases of well-directed, but sometimes radical, surgery in severe gunshot wounds is shown in a paper by Bland-Sutton,²⁶ describing a compound comminuted wound of the upper end of the humerus. The head of the bone was replaced in as nearly its normal position as possible, and the deltoid muscle and the circumflex nerve were repaired as well as possible. The utility of the limb was undoubtedly saved by the operation. It is important that the work should be done before the formation of callus and fibrous tissue has rendered it impossible.

On the other hand, Sehr²⁷ emphasizes the value of conservative treatment in certain other cases in which he advocated Bier's stasis hyperaemia. He applies the constrictive bandage once for all, and leaves it day in and day out. When the bandage could be applied within 24 up to 60 hours after the injury, the local and general infection was found to be reduced to a minimum, and in many cases the infection was entirely aborted. The author of the paper is very enthusiastic about this method, and says that since it has been applied in his service in treatment of all severe wounds on arms and legs, there has been no case of gas gangrene from the wound on the extremities. The constricting band is applied no tighter than a plaster bandage. The patient must not feel it as painful and the pulse below must always be palpable. The limb swells below, and may even blister, but the wound is left practically untouched so as not to open new outlays for lymph and blood. The wound is merely covered loosely with gauze, not washed or irrigated, and the limb fastened loosely to a splint or placed flat on a pillow. The pain is promptly arrested, but is liable to return if the limb is raised above the horizontal. As soon as possible, on the fourth or sixth day, the patient must make movements inside the loose dressing. The only surgical measure applied was incision under local anesthesia of a gravity abscess, if such developed. The band is left in place for a week or two.

A paper by Linberger²⁸ advocates much the same treatment as that described by Sehr.

In a paper on the treatment of gunshot wounds of long bones and large vessels, complicated with suppurations, Krotkina²⁹ draws the following conclusions from his experience with the wounded in a large Petrograd hospital: Many gunshot fractures and lesions of the joints heal without any surgical interference. In cases of inflammatory exudates in the joints, Bier's hyperemia treatment must be resorted to, followed, if necessary, by puncture of the joint. Bier's treatment gives good results, even in pyemic states, provided the local process is limited to the joint. When Bier's treatment is used on the knee joint, the popliteal fossa must

be carefully guarded. In case cellulitis sets in, the hyperemia treatment must be preceded by large incisions. If continuous and persistent Bier treatment does not prevent or stop suppuration from the joint, the temperature keeping high, good results are often obtained from partial excision of the joint. In case of malignant edema, the general condition being grave, the earliest possible amputation of the limb is indicated.

The value of conservative treatment in certain "Suppurating War Wounds of the Knee" is emphasized by Ponomareff,³⁰ who decries any attempt to probe or drain the cavity of the knee joint when there is an infectious process in it or such is even suspected. He advocates absolute rest, immobilizing with plaster or splint. If suppuration keeps up, however, he incises and drains the anterior half, following this by incising and draining the posterior half, if this alone does not help. If nothing avails, excision of the joint or amputation of the femur must follow promptly if the infection shows a tendency to spread to adjacent regions.

In two cases of severe suppuration of the leg, Rost³¹ has made a ligature of the femoral vein, and believes that this simple operation has saved the life of the patient in each case. He considers that this operation is particularly indicated in suppurative injuries of the extremities when the patients are for some time in grave conditions and when embolic processes have developed or threaten to develop.

Hardoin³² discusses the etiology and treatment of traumatic talipes equinus, which he says he has seen in hundreds of men as a sequel to wounds of the leg. He is positive that it might have been prevented in 75% of the cases and mitigated in the others. These assertions are sustained by the experience that in certain hospitals this deformity occurs only exceptionally, while in others it is common. Early exercise of the ankle after a wound of the leg is imperative. Even the pressure of the bed clothes, when the men have to stay long in bed, may bring on the deformity, but the usual cause is that the men get up and use the leg too early, stepping on the toes to reduce the pain, and thus fastening the deformity on themselves. Various methods for correcting the established deformity are outlined.

Two cases of this same deformity of talipes equinus following gunshot wounds and sepsis have been treated by Fortunet³³ by cutting off the head of the astragalus, rather than by its removal. He says that the operation is simpler and the results as good.

(Ed. Note.—The editors would suggest that an astragalectomy, with displacement of the foot backwards, might result in a better weight-bearing function than the procedure suggested.)

POLIOMYELITIS.

In a series of lectures, Batten³⁴ brings out many points which are often overlooked in the

treatment of acute cases of poliomyelitis. He considers it an acute specific fever, with an incubation period of 4-12 days, during which time the patient should be isolated; after this time the infectivity is very slight, and in hospitals it is not necessary to place the patient in a separate ward, bed isolation being sufficient to prevent the chance of infection.

Batten believes that, as in typhoid, we can look out for contagion, so in this disease it is essential to pay careful attention to the mucous discharges from the throat and nose. He thinks that it is only through these excreta that the virus may be carried from patient to patient. He considers the use of blood serum from recently recovered cases of poliomyelitis to be of much value in a great many cases, but does not as yet think that we can depend upon it for definite and specific action. He lays special stress upon attention to the early after-treatment, and speaks first of rest. This he thinks is the most important factor. He even says that too early movement may start up a quiescent condition. After three weeks of rest, careful use of the muscles may be allowed. He calls attention to the importance of posture. Many cases are kept immobilized in a splint or other apparatus for months without careful attention being paid to their posture. Muscles which are later expected to resume their normal function should be kept at rest in a position which will prevent any over-stretching or abnormal strain.

Batten uses celluloid splints, accurately fitted to the limb as soon as it is possible to make a cast after the onset of the disease. These splints are carefully made over a plaster cast, which must be formed in a normal position of the limb.

Reéducation is a most important principle of the treatment. In the early stages, badly paralyzed muscles can often be voluntarily put in action while the patient is immersed in a warm bath. When the weight of the limb interferes with voluntary movement, this exercise with the support of the water is of much value. Batten recommends walking exercise in the erect position as the best form for reéducation of the muscles of the trunk. Splints and braces are often necessary, and among other methods of treatment he mentions massage and electricity.

During the last four years, Batten has followed these postural and reeducational lines of treatment in all acute cases, with the result that very few deformities have arisen; those that have been more often noticed were due to the contraction of the flexor muscles of the thigh.

Lovett and Martin³⁵ report a study of the Vermont epidemic made in December, 1914, where 235 cases were examined; 149 only were of less than six months' duration. The cases were classified according to the severity of the paralysis and note was made of the need of braces, minor operations, and muscular exer-

cises. These cases have since been followed up, and although no systematic treatment has been used, great improvement has been found.

The same authors³⁶ have described a method of muscle testing to be used in individual cases of paralysis.

(Ed. Note.—The editors believe this may be of great value. They recognize the difficulty of control with certain muscle groups and in young children.)

In a paper on the Serotherapy of Poliomyelitis, Netter³⁷ reports the results of a series of thirty-two cases in which the patients were treated by means of serum obtained from persons who had had the disease. He regards his results as promising: six rapid and complete cures; three, improvement approximating a complete cure; seven cases of marked improvement; in five others appreciable improvement. Eight of the children died. The injections were made into the spinal canal and were repeated daily for a week. The serum seems to keep its efficiency up to thirty years.

(Ed. Note.—25% of deaths is not less than the average in some of the epidemics, and the recoveries do not seem greater than may be expected under favorable conditions as regards good nursing.)

Gallie³⁸ makes a further report of his operation of tendon fixation, giving the results in 150 cases. Since the first 20 cases were done, three years have elapsed. He describes the operation briefly as consisting of exposing and isolating the tendon, drawing it taut so as to correct the existing deformity, and burying it in the bone in such a way that when healing takes place the deformity cannot recur. Compared with arthrodesis, it should be preferred in some cases because it restricts the motion in one direction only, that of the deformity. He considers that it gives much more success than tendon transplantation and can be used in a greater variety of cases. The method, however, can be combined with both these operations.

In a study of the results of the non-operative treatment of poliomyelitis in the hospital clinic, O'Reilly³⁹ reports rather discouraging findings. However, the unfavorable outcome has been due, he believes, to the fact that the treatment suggested has not been well carried out.

(Ed. Note.—This study serves to show the necessity of constant, if not daily supervision, of the work in the training of weakened muscles.)

In a long experimental study of tendon transplantation, with many illustrations showing the methods and the histological results, L. Mayer⁴⁰ adds much to our knowledge of this subject. It is not possible to review this article satisfactorily, but after reading it, one feels certain that the rules that Mayer makes in regard to tendon operations should be more carefully followed: First, never operate upon any case unless certain that the after-treatment can be thoroughly and conscientiously carried

out under proper directions. The operation may never be considered final with the expectancy that a good result will follow. No matter how careful the technic, adhesions, degenerative changes in the tendon are apt to occur; and these can often be prevented, at least in part, by an early function of the limb. If the operator is satisfied with the physiological fixation of the tendon, exercise can be begun a few days after the operation. The author sometimes implants a silver wire into the muscle at the time of operation so that later electrical stimulation can be obtained more perfectly. In cases where the suture of one tendon to another must be considered ideal fixation, it may be necessary to wait 2-4 weeks before motion is allowed. The transplanted tendon is always barely normal and it should be strengthened by carefully graded exercise, and often protected by a suitable apparatus, and this exercise, which is so necessary in the after-treatment, must be continued until the transplanted muscle can actually do the work required of it.

In a study of "Implantation of Nerve into the Muscle," Heineke⁴¹ has made experiments on rabbits and can show that functional connection of nerve and muscle is easily obtained already after 1-2 weeks. Faradic reaction begins in several parts of the muscle, and after 4-6 weeks a strong contraction of the whole muscle belly is caused; after 2 months the contraction is practically normal, and the muscle shows no signs of degeneration.

This was also to be noticed when the artificial paralysis had existed for some time, e.g., in a case of 90 days' duration. Five weeks after the implantation, the muscle, which had become degenerated, of yellow color, thin and flaccid, was again of normal color, and could be stimulated in its whole length by the Faradic current. This method, called neurotization by Heineke, does not need any special technic. It is also possible to implant flaps of normal muscles into a paralyzed muscle, and often is found possible when the muscles belong to different nerve zones. Held, a well-known authority in the field of nerve anatomy, has examined the preparations of Heineke, and could find that good connection of the transplanted nerve to the muscles takes place by means of the formation of new end organs, but has not yet been able to decide whether the old nerve sheath had something to do with this process. Further experiments have been made, in that into a normal not paralyzed muscle another motor nerve was implanted, and the effect of the operation was proven after several weeks by a stimulation from the implanted nerve. It was found that it is not possible to implant effectually another nerve into a normal muscle, and Heineke concludes that the implanted nerve can grow in a muscle only by using the old path and nerve sheath.

WEAK FEET.

Grossman⁴² reports on a study of 700 cases

of weak feet studied in children in kindergarten schools. There is nothing especially new in the contribution, but the study serves to bring to our notice the need of proper care of the feet in early childhood, and shows that, along with the teaching of proper posture, it is necessary to give attention to the need of proper shoes and stockings and proper methods in walking.

For severe flat-foot, Arndt⁴³ uses a modification of Muller's operation, consisting in transferring and fixing the tendon of the anterior tibial behind the tuberosity of the scaphoid. The lower end of the tendon is not detached.

VISCEROPTOSIS.

Levy and Kantor⁴⁴ give the results of their study of a series of 1600 private patients complaining of stomach trouble. Of these, 898 had a routine x-ray examination, that is, what is generally spoken of as a bismuth x-ray of the gastro-intestinal tract. A diagnosis of ptosis was made, either from the fluoroscopic or radiographic examination. The authors have grouped as ptotic those stomachs whose low-lying point, "taken with the patient standing after a bismuth meal," reached one inch below the line joining the tops of the iliac crests. In this series gastropptosis occurred 579 times, 64%; and marked gastropptosis in 46%. The proportion of women to men was 6-5, and the condition occurred more often in individuals under 40 years of age.

The authors think that visceroptosis cannot be ascribed to improper garments or other incidental causes, but is more intimately related to the structure of the body, and probably arises from some congenital predisposition. It is not in itself a disease, and the most marked types need not necessarily prevent the affected organs from performing their proper functions.

BACK CONDITIONS.

In a long review of all the various forms of backache, illustrated with many photographs, Marshall⁴⁵ presents many different points of view,—anatomical, physiological, social and economic,—that must be understood for successful management of these cases. He shows a variety of cases and various theoretical conclusions, a study of which may be helpful in understanding some of the types which present all these complications.

Shackleton⁴⁶ considers the condition of severe pain in the back due to a large transverse process on the fifth lumbar vertebra, which may or may not impinge upon the sacrum, as a very important but quite uncommon occurrence. He collected 20 cases in which the results of removal by operation had been fairly good. He reports three cases, two of which had complete relief from pain after the transverse process was removed.

Lyon⁴⁷ writes from the military convalescent home at Spa, Belgium, to describe seven cases

of an inflammatory process in vertebrae during convalescence from typhoid. In only two cases was it severe, with intense pains and swelling of the soft parts and fever. The vertebral affection persisted for two, three, or four months in all, long latent phases alternating with exacerbations. There was very little tendency to suppuration, and the prognosis was favorable, with final complete recovery. He warns that pains in the back during convalescence call for careful examination of the vertebrae. Even mild post-typhoid vertebral affections may be accompanied with great pain, but permanent recovery is the rule.

Schonfeld and Delma⁴⁸ have studied the x-ray pictures of 140 cases in order to find out what may be considered as normal and what as abnormal on the lower part of the sacrum and coccyx and their junction. They have found out that conditions which are spoken of as usual in text-books on anatomy are only occasionally found in plates; for instance, the so-called foramen sacrale quintum, which they found only 5 times among 140 cases.

The sacrum and coccyx are very often grown together, whereas a joint is frequently found between the first and second coccygeal. At times the union between sacrum and coccyx is bony only on the lateral parts, and sometimes only on one side, thus representing some kind of a sacro-caudal transitional vertebra. The connection between the bodies is often in the form of a spondylosis. It has been pointed out that assimilation on the upper end of the vertebra is usually combined with such on its lower end. This, however, has not been proved by the authors.

SYPHILIS OF BONE.

A study of the disproportionate length of the legs in congenital syphilis is reported by Chable,⁴⁹ who cites Fournier's statement that he found some syphilitic bone affection in 38.7% of 212 cases of inherited syphilis in children over 2. The tibia was the bone affected in 46.6% of the cases. The trouble may be an osteoperiostitis or a gummatous affection. The bone curves and seems to grow thicker, and Chable has encountered two cases in which, after puberty, the bones grew abnormally long, the tibiae being 10 cm. longer than the femurs in one case. This excessive growth had begun at the age of 17. In the other case only one leg had grown to excessive length. The distance from the iliac spine to the malleolus was 86 cm. on this side and 83 cm. on the other. The tibia on this side and in one leg in the other patient was of the typical saber shape, with the characteristic thickening and periosteal exostoses. In the older man (22) the bone substance has encroached on the marrow cavity and already shows signs of eburnification at some points. In the other case the bone shows the characteristic softening, the stage of periostitis with hyperos-

tosis being followed by an inflammatory new growth, which likewise encroaches on the marrow cavity. The whole bone is thicker than normal. The pains and functional disturbances from these changes in the leg bone are liable to be misinterpreted, especially as they may not develop until early adult life. Disproportionate length of the leg below the knee should always suggest possible tardy inherited syphilis.

CONGENITAL DEFORMITIES.

The importance of spina bifida in its relation to postural deformities that may develop in the trunk during later life, *i.e.*, its association with irregular formations of the fifth lumbar vertebra, adds much to the interest of the 16 cases reported by Cates.⁵⁰

Of the sixteen cases in which an operation was performed (two had the meningeal sac removed), there were only seven living two years afterwards. Six died in the first three months after the operation. Several of the cases have grown up to be strong, able-bodied workmen.

Cates considers that most of these cases have a low vitality and a generally poor resistance. He does not make mention of the structural deformity of the fifth lumbar vertebra.

In a case of congenital elevation of the scapula, Peekham⁵¹ reports a satisfactory result which he obtained by dividing the trapezius muscle at the lower angle of the scapula and removing a wedge-shaped piece. After all tissues were sutured, the needle was carried across close to the bone and passed through all the deeper tissues, giving a certain amount of fixation. With chromic catgut sutures this lower angle was drawn down closer to the spinous processes. The result, six months later, was quite satisfactory.

MISCELLANEOUS.

It is yet too early to make any definite statement in regard to the pathology of this condition which has been spoken of as Von Perthes' disease. For a long time these cases have been classed as mild tuberculous affections, but the x-ray shows us a very characteristic picture, which seems to be related to a definite clinical entity.

In the 22 cases reported by Taylor and Frieder⁵² there does not seem to be any uniform history of injury, though a mild course which developed in each is characteristic. As they say, the x-ray picture, of course, and the final result are typical. It is a benign affection which needs little treatment, and they consider its cause unknown. Legg, however, shows that in most all his cases there is a definite history of injury, soon followed by a limp with little pain or muscle spasm. The bone destruction is not marked, and the x-ray simply shows a thickening and shortening of the neck of the femur with a destruction or absorption of the epiphy-

sis. Legg argues that the trauma causes an injury to the epiphysis, and that with the disturbance of circulation the bone is either destroyed or changes in its consistency, so that it soon becomes irregular in form. His careful study of a long series of cases bears out all these facts, and it seems probable that we must consider this disease as a trophic condition, usually due to trauma.

(Ed. Note.—The editors believe the careful study of this condition needs to be continued, as undoubtedly some cases still being considered as due to tuberculosis should be included in this group. In this connection it is well to call attention to the fact that this entity, to which the name of Perthes is attached, was first described by Legg of Boston, and later by Calvé of Berck, and that only subsequently did the name of Perthes become associated with it.)

REFERENCES.

- Whitebeck: Amer. Jour. Orth. Surg., March, 1916, p. 119.
- Campbell: Amer. Jour. Orth. Surg., April, 1916.
- Gauvain: British Jour. of Tuberculosis, Jan. and April, 1916.
- Horwitz: Missouri State Med. Association Jour., March, 1916.
- Pannu: Norsk Magazin for Laegevidenskab, lxxvii, No. 5, May, 1916; Abst. J. A. M. A., July 1, 1916.
- Silfverskiöld: Abst. J. A. M. A., July 15, 1916, p. 245.
- McCrae: Penn. Med. Jour., April, 1916; Abst. J. A. M. A., May 20, 1916, p. 1660.
- Schloss: Jour. A. M. A., July 15, 1916, p. 245.
- Kahle: Abst. J. A. M. A., July 15, 1916, p. 245.
- Wegelin: Correspondenz-Blatt f. Schweizer Aerzte, xlvii, No. 20, May 13, 1916; Abst. J. A. M. A., July 1, 1916.
- Banditt: Contributions to the Study of Vertico-Transverse Fractures of the Neck and Body of the Astragalus.
- Briekner: Amer. Jour. of Surgery, March, 1916.
- Robinson: Missouri State Med. Assoc. Jour., February, 1916.
- Connell and Freyer: The Practitioner, March, 1916.
- Herniman-Johnson: The Practitioner, March, 1916.
- Lane: The Practitioner, March, 1916.
- Taylor: The Practitioner, March, 1916.
- Sever: Surg., Gyn. and Obstet., March, 1916.
- Hartwell: Amer. Jour. Orth. Surg., Feb., 1916, p. 82.
- Dobrovolskaja: Abst. Jour. A. M. A., July 29, 1916, p. 400.
- Tongu: Jour. A. M. A., Feb. 12, 1916, p. 543.
- Hawley: Amer. Jour. Orth. Surg., January, 1916, p. 29.
- Ruch: Amer. Jour. Orth. Surg., February, 1916, p. 71.
- Osgood: BOSTON MEDICAL AND SURGICAL JOURNAL, Jan. 27, 1916, p. 109.
- Hohmann, Lange and Schede: Münch. med. Woch., Feb. 15, and 22, 1916.
- Bland-Sutton: Brit. Jour. of Surg., January, 1916.
- Sehr: Jour. A. M. A., April 22, 1916, p. 1360.
- Lubberger: Münch. med. Woch., Feb. 29, 1916.
- Krotkina: Abst. Jour. A. M. A., July 29, 1916, p. 400.
- Ponomareff: Russkij Vrach, xv, No. 21, Abst., Jour. A. M. A., Sept. 9, 1916.
- Rost: Münch. med. Woch., No. 2, Jan. 11, 1916, p. 58.
- Hardon: Fortnet.
- Batten: Lancet, April 15, 1916.
- Lovett and Martin: Vermont Medicine, February, 1916.
- Lovett and Martin: Jour. A. M. A., March, 1916, p. 729.
- Netter: Arch. de méd. des enfants, January, 1916, xix, No. 1.
- Gallie: Amer. Jour. Orth. Surg., January, 1916, p. 18.
- O'Reilly: Amer. Jour. Orth. Surg., March, 1916, p. 143.
- Wager: Surg., Gyn. and Obstet., February, March, April, 1916.
- Heineke: Langsbock Archiv f. klin. Chir., No. 105, p. 517, 1914.
- Grossman: Interstate Med. Jour., May, 1916.
- Arnd: Correspondenz-Blatt f. Schweizer Aerzte, March 4, 1916, p. 308.
- Levy and Kantor: BOSTON MEDICAL AND SURGICAL JOURNAL, April 13, 1916, p. 534.
- Marshall: BOSTON MEDICAL AND SURGICAL JOURNAL, April 27, 1916, p. 501.
- Shadlen: Jour. A. M. A., May 20, 1916, p. 1600.
- Lyons: Med. Klinik, Dec. 19, 1915; Abst., Jour. A. M. A., Feb. 12, 1916, p. 541.
- Schonfeld and Delma: Fortschritte der Roentgenstrahlen, xxiii, No. 6, p. 496, 1916.
- Chable: Correspondenz-Blatt f. Schweizer Aerzte, xlvii, No. 24, June 10, 1916; Abst., Jour. A. M. A., July 29, 1916, p. 398.
- Cates: BOSTON MEDICAL AND SURGICAL JOURNAL, March 23, 1916, p. 429.
- Peekham: BOSTON MEDICAL AND SURGICAL JOURNAL, March 2, 1916, p. 315.
- Taylor and Frieder: Surg., Gyn. and Obstet., February and March, 1916.

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ERNEST GREGORY, *Manager*,

126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

RECONSTRUCTION BASE HOSPITAL

No. 1.

"RECONSTRUCTION" Base Hospital No. 1, for the United States War Department, is to be built here in Boston on Parker Hill, on the site of the old Parker Hill Reservoir, now graded to level, next the Robert B. Brigham Hospital.

Its object is the "reconstruction" of the crippled soldiers, likely to return to us not long hence. This work is special work, not adapted to the general base hospitals at the front or here.

It means the reconstruction, by operation, by apparatus, by education—re-education—of those who come back with fractures ununited or ill-united, with stiff joints, with nerve palsies from injury or shock—of those who need plastic operations to remedy contractures or defects, or need appliances to supplant a missing limb, and the necessary education in their use.

Most of these men, if discharged early, would be permanent cripples—a burden on the community. It is, therefore, a community problem as well as a military problem.

The Canadian experience indicates that about three-quarters of those invalidated home fall in this class,—in the class whose cases the kind of special orthopedic or other treatment to be provided for by this hospital plan is well worth trying in the attempt to make them again fit for the line or for wage-earning at home.

One of the surprises of this war has been the success of both the Allies and the Central Powers in rendering again serviceable thousands of men who would have become derelicts under the old régime. They had a civil machinery and experience better than ours, being older in the field of workmen's compensation. For us this is new and unpredicted work,—a new problem, one our Government has not fully prepared for,—one in which the Government is very ready, busy as it is with the enormous expansion of routine work, to accept outside help.

This Boston hospital for reconstruction, a fully formulated scheme for such help, has been accepted and endorsed by the War Department.

Thanks primarily to the efforts of Dr. Joel Goldthwait, much has already been done.

Mayor Curley has had the Parker Hill Reservoir levelled off (it had long been planned to make this a park—the Mayor saw that this was the time to do it, and did it), and the Robert Brigham Hospital, next door, able to spare something from its wonderful central plant, has agreed to furnish light, heat, kitchen, laundry, chemical laboratory, x-ray plant, etc.

As to professional care, a unit of eleven men has been gathered,—gathered purely on the basis of proved efficiency in the class of work to be provided for.

They are ready, the Brigham Hospital is ready, the site is nearly ready. The War Department is ready to take us over as soon as we are ready to receive patients.

In the meanwhile the community must help. Just now the War Department has no funds applicable to the erection of our buildings.

This erection is our civic problem. Remember, it is not only a war problem; it is a community problem in peace as well as war,—this reconstruction of cripples to usefulness.

Later it may become purely an industrial problem, and we feel sure that our war experience will help mightily in this field to the solu-

tion of our problem of accident and disability under peace conditions.

Just now, however, it is war;—and we are concerned with a detail problem in war surgery (very intimately connected with the surgery of industry) which the Central Government—overpressed—has turned over for the moment to local initiative.

Our community is signally honored by the command to go ahead. It seems we are to set the pace in this important work!

We want—for now—four wards of temporary type, of twenty-four beds each. Each will cost about \$4000 to build and fit out.

The plans are all ready, not only for this group of buildings we are to start with, but for eventual expansion to five hundred beds when this shall have become a War Department hospital.

We have money enough for one ward already subscribed, and are going ahead on this. Money for three more wards is needed. Everything else is ready. All that lies between us and a very early completion of the small hospital, ready to start in receiving patients as soon as they come, is money.

It is hoped that individuals and associations will interest themselves.

Nothing could be of more service to the cause we are all trying to serve, nothing would redound more to the credit of the community.

Checks or pledges—better checks—may be sent to Mr. Charles S. Rackemann, Ames Building, Boston.

F. J. C.

THE FOOD VALUE OF MEAT PREPARATIONS AND MEAT EXTRACTS.

A GREAT deal of misapprehension still exists as to the food and medicinal values of soups, broths, and the various meat preparations and meat extracts. The laity have a great deal of faith in them, and the profession is not clear enough on the subject to take a positive stand relative to them. While they do no direct harm, they are of harm indirectly because they are relied upon to give a nourishment which it is not in their nature to give, and which might be given except for their use as a food. A review of most of the more recent investigations brings out the fact that practically none of these products has any real food value.

Soups and broths are, of course, widely used as articles of diet. Their main virtue lies not

in their food content, but in their flavor. They are condiments rather than foods. One pound of beef cut up and boiled with one-third of a pound of veal bones, and the whole boiled down to one pint of strong soup yields only about 5% of solid matter, consisting of about equal parts of gelatin, fat and extractives, with a little mineral matter. Most clear soups contain not more than 2½% solid matter—at best a negligible amount of solid matter, even if that amount were real food. They have a culinary value as vehicles for starchy or nitrogenous matter—that is, for making thick soups. Moreover, clear soups do act as appetizers, and as such stimulate the gastric juices. In most cases this is not desired. In acute febrile conditions the nature of the diet permitted finds no use for an increase in the amount of the digestive juices.

Of the various beef preparations, beef extracts are best known and most widely used. They are urged upon the public in the guise of highly concentrated foods. About 34 pounds of beef are usually reduced to make one pound of beef extract, and this, in turn, is recommended for the making of about 70 pints of beef tea. Analyses of such preparations show that the total protein content ranges between 14 and 19%. Not more than 7% is albumose. The total nitrogen content is not above 9% (*Lancet*, 1908, ii, 1233). Extractives of the xanthin type form the largest proportion of these preparations—even up to 60%. In these proportions beef extracts are far from concentrated foods. Indeed, they cannot conscientiously be recommended as foods. Beef extracts have neither stimulating effect upon the heart nor upon the nervous system, nor do they have any effect to reduce the time for recovery from fatigue. They, too, like soups and broths, stimulate the gastric juices. Their proper place is in the kitchen rather than at the bedside. In the metabolic diatheses, where there is already an over-production or retention of these meat extractives, the ingestion of extractives in the large quantities contained in these meat preparations can do much harm. It is possible, however, that any benefit derived from the use of these preparations may arise from the presence of vitamines, in which beef is so rich. Even this is but a probability, for it is not unlikely that the vitamines may be rendered inert during the reducing process in the preparation of these extracts.

In regard to the beef juices, when prepared by the warm process, even the small amount of soluble protein becomes coagulated. The cold process at least obviates this difficulty, but there is, on the other hand, the tendency to putrefaction. With neither process, however, is there at best more than 9.5% of protein. The usual range is from .3 to 17%. Some of the poorer qualities of beef juices are nothing more than beef blood. Beef juices containing even 5% of protein would require 3 pints daily to feed an invalid. In circulatory, nephritic or like conditions, this added introduction of fluids into the circulation increases the blood pressure or puts an added tax upon the glomerular epithelium, which might be highly undesirable.

Beef tea can be entirely dismissed as a food or as anything else of value, for it rarely contains more than $1\frac{1}{2}\%$ of protein. Beef powders, on the other hand, are not really beef preparations in the sense that meats are rendered in their preparation. The whole beef is merely dried and then powdered. The meat protein is present undiminished, but the bulk is reduced. The meat powders are useful in some cases of forced feeding, for long marches and under like circumstances. Under present conditions of food stringency, the destruction of large quantities of food for their preparation is little short of criminal. The abolition of these foods from the dietary of the general public and from that of the invalid would be a step in the direction of rational food economy.

THE MASSACHUSETTS MEDICAL SOCIETY.

To the visiting Fellows of the Massachusetts Medical Society, upon the occasion of this annual meeting, the Boston members of the profession extend, as always, most cordial greeting and hospitable welcome. The circumstances under which the meeting is held this year are of such grave national import that they cannot fail to temper the character and sentiment of the commemorative proceedings. Men have left, or soon will leave us, some of whom never will return; and what in another year may be the situation is matter of equal apprehension and uncertainty.

Notwithstanding these conditions, the scientific program of the Massachusetts Medical Society has been carefully arranged and prepared as usual, and has been fully carried out, with

the addition of a new section on hospital administration. Full reports of all proceedings, and the complete text of all the papers presented, and their discussion, will appear systematically in subsequent issues of the JOURNAL. Particular attention is directed to the Annual Discourse by Dr. Truesdale, with its project for the establishment of a chair of military medicine at the Harvard Medical School, which appears as leading article in another column of this issue.

These are restless and perplexing days for all who, like physicians, are earnestly desirous to do their best duty for their country and for humanity in the present crisis. More even than at other times, the Massachusetts Medical Society is at this juncture both symbol and actuality of the united and harmonious profession of our State, zealous in the service of the common welfare whenever and wherever the need for such service may arise.

MEDICAL NOTES.

HEALTH CENTERS IN BUFFALO.—The recently published annual report of the Department of Health of Buffalo, N. Y., contains an interesting account of the organization of its health department into health centers. These health centers are sub-stations of the Department of Health, organized for curative and preventive work in a given district.

"The equipment in all health centers includes an attending medical staff of city physicians. Department of Health nurses detailed from the Bureau of Child Hygiene, and the Tuberculosis Division, a registrar for taking histories and keeping records, Nursing of the district is conducted by the District Nursing Association, who make assignments for the purpose.

The scope of the work includes:

First.—A Well-Baby Clinic, where their nutrition and well-being is supervised and mothers are instructed.

Second.—A Sick-Baby Clinic, where sick children are cared for, malnutrition cases being referred to the Children's Hospital and University of Buffalo service.

Third.—A Nose and Throat, Eye and Ear, and Skin Clinic.

Fourth.—A Medical Clinic, where all cases are treated except venereal diseases, which are referred to the Urologic Hospital, and tuberculosis cases, which are referred to the Tuberculosis Association Dispensary or the Municipal Hospital for treatment and disposition, according to their character, incipient cases being diverted to the J. N. Adam Memorial Hospital at Perysburg, N. Y.

Fifth.—Prenatal Clinic, where expectant

mothers are guided through pregnancy, to secure healthy children and safe confinement.

Sixth.—Free Dental Clinic, with full-time service staff for school children in two health centers (in addition to the city's free dental service at the University of Buffalo).

The health centers are further utilized as distributing centers for milk and eggs, sputum napkins, etc., for tuberculosis cases, and for supplying the profession with laboratory outfits for the examination of pathological secretions, blood tests, etc., and which include Wassermann, Widal, paratyphoid, tuberculosis, pneumonia, diphtheria and gonorrhea examinations, and, finally, for the distribution of typhoid, diphtheria, and anti-tetanus sera. Complaints relative to nuisances and offense are received and transmitted to the general office for suitable action. In addition to ordinary sanitary deficiencies and violations, the investigation emphasized its value in revealing many instances of moral and physical defectives.

Experience shows that the health center brings the Department of Health in close relation with the people and elicits a responsive attitude. It secures the reporting of contagious diseases and lessens their spread. Morbidity and mortality are greatly influenced. Duration of sickness is lessened and restoration to health promoted by securing selective and appropriate hospital and other care for the sick, and by following up cases of convalescence after institutional treatment. Prenatal and child welfare work makes for better individuals, and hospital patronage by pregnant women is increased. Traditional prejudice and distrust of hospitals and dispensaries is offset and hospital care of contagious cases increased."

NATIONAL TUBERCULOSIS ASSOCIATION.—At the meeting of the National Tuberculosis Association, held at Cincinnati, May 9, 10 and 11, Massachusetts was represented by Dr. John B. Hawes, who was appointed as delegate by the Governor. Dr. Arthur K. Stone, President of the Boston Association for Relief and Control of Tuberculosis and Chairman of the Board of Trustees of Hospitals for Consumptives; Dr. Vincent Y. Bowditch; Dr. Walter Griffin of the Sharon Sanatorium; Mr. Seymour H. Stone, Secretary of the Boston Association for Relief and Control of Tuberculosis and of the Massachusetts Anti-Tuberculosis League; Mrs. Mabel G. Smith of Cambridge; and Dr. George L. Schadt of Springfield, were also present from this State. Dr. Hawes read a paper which aroused considerable very interesting discussion, with the following title, "Are Sanatoria Worth While? A Study of the Present Condition of 1056 Patients Discharged from Massachusetts State Sanatoria from May, 1912, to May, 1914." This paper was written by Miss Bernice W. Billings, the after-care worker, and Dr. Hawes.

WAR NOTES.

MENINGITIS AT GREAT LAKES NAVAL TRAINING STATION.—It is reported that during the past six months there have been eighty cases of cerebro-spinal meningitis at the Great Lakes Naval Training Station, resulting in thirty deaths. The commandant at the station states that the percentage of death is less than normal. There are at present ten cases under treatment, six of whom are convalescing. Although the station is designed for only 1,400 men, over 8,000 are being quartered there pending a considerable enlargement of the station. The sick list totals 400 men, most of whom are suffering from minor ailments.

CANADIAN MILITARY HOSPITALS.—It is reported from the Canadian Military Hospitals Commission that there were, on May 22, 6,778 men under its care, including 5,600 convalescents and 720 tuberculosis patients.

AMBULANCE UNITS FROM PENNSYLVANIA.—The students of Pennsylvania State College have made up two ambulance units and have been mustered into Government service for duty in France. They will be trained and equipped in the Allentown concentration camp.

MASSACHUSETTS GENERAL HOSPITAL UNIT.—The following physicians have been commissioned as officers and will accompany the Massachusetts General Hospital Unit to France.

Majs. Frederick A. Washburn, Richard C. Cabot and Lincoln Davis; Capts. Henry C. Marble, Beth Vincent, Zabdriel B. Adams, Richard F. O'Neil, William J. Mixer, Roger Kinnicut, Albert S. Merrill, Oscar Teague, Frederick C. Irving and Augustus G. Reynolds; 1st Lts. Ralph A. Hatch, DeWitt S. Clark, George A. Ireland, Jr., Harold G. Tobey, James H. Means, George Clymer, Paul D. White, Wade S. Wright, Joseph C. Aub, William H. Gullifer, William H. Sherburne, Edward L. Oliver and Carl Binger.

WAR RELIEF FUNDS.—On June 9 the totals of the principal New England war relief funds reached the following amounts:—

Belgian Fund	\$620,604.93
French Wounded Fund	230,626.46
Armenian Fund	189,326.71
Serbian Fund	121,962.66
French Orphanage Fund	107,230.51
Surgical Dressings Fund	97,128.97
Boston Ambulance Fund	84,929.48
Polish Fund	75,361.76
American Children's Fund	51,031.50
Italian Fund	41,538.87
La Fayette Fund	27,038.03
French Phthisis Fund	16,173.34
American Volunteers' Fund	1,563.53
French Musicians' Fund	1,419.92
War Dogs' Fund	474.25

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending June 9, 1917, the number of deaths reported was 224, against 202 for the same period last year, with a rate of 15.12, against 13.85 last year. There were 31 deaths under one year of age, against 40 last year, and 52 deaths over 60 years of age, against 61 last year.

The number of cases of principal reportable diseases were: diphtheria, 96; scarlet fever, 38; measles, 261; whooping cough, 7; typhoid fever, 4; tuberculosis, 45.

Included in the above were the following cases of non-residents: diphtheria, 24; scarlet fever, 6; typhoid fever, 2; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 7; scarlet fever, 2; measles, 6; typhoid fever, 1; tuberculosis, 27.

Included in the above were the following deaths of non-residents: diphtheria, 1; measles, 1; tuberculosis, 2.

SPRINGFIELD ACADEMY OF MEDICINE.—At a recent meeting of the Academy of Medicine a committee was appointed on war conditions among physicians. This committee makes the following recommendations.

That physicians of Springfield and vicinity bind themselves to a gentlemen's agreement to the effect:

1. That they will care for the patients of physicians away from the city for patriotic reasons and divide equally the fee when collected with the doctor's family in all such medical cases as would normally fall under the absent physician's care.

2. That the one taking the case will discontinue medical service on such patients and refer them back to the physician on his return; that they agree not to accept calls from such families within a year after this doctor's return, except with his permission.

3. That they will volunteer consultation or special services to the military medical staff when desired.

4. That all physicians keep in close touch with the dependent families of our medical brethren engaged in patriotic service, and if occasion arises in which help is needed, to report the same to this committee in order that the profession may render assistance.

5. That physicians co-operate fully in these matters in order that absent confrères and their families may render assistance.

(Signed): HARVEY W. VAN ALLEN,
THOMAS G. ALCORN,
RALPH B. OBER.

SOCIAL WORK AT THE BOSTON CITY HOSPITAL.—A report of the Social Service Department of the Boston City Hospital, recently published, covers the period from February 1, 1916, to January 31, 1917. It states that since the organization of this department, three years ago, the

work with child patients has been emphasized; first, because this work is more hopeful and preventive, and second, because the numbers involved were relatively so much smaller as to make it possible to try out schemes of organization. The director, Miss Gertrude L. Farmer, states:

"From the beginning I have had a strong desire to organize and develop the various forms of social service for the children who come to the City Hospital. Health work for these little patients is both more appealing, more hopeful, and more truly economical than with certain other groups with whom we deal. The community is rich in resources that can be called upon to supplement the medical plans for their welfare.

"We are not yet able to speak with certainty as to the number of children treated here yearly. I think it will be found to be between 6,000 and 8,000, new patient and first visits, including House, Out-Patient, and South Departments. Of the 2625 patients admitted to the latter in 1916, 2190 were under 15.

"As would be expected, the two largest groups of children are those with medical diseases, like pneumonia, typhoid, etc., and those with surgical diseases, as empyema, osteomyelitis, and including fractures and other accidents.

"Taking the birthplace of the father with that of the child, there were 17 different nationalities among 457 children. In 366 families the average group was 6 members. The weekly income \$15.87, number of rooms 4, monthly rent \$12.59.

"254, or 52 per cent. of the 490 children, had been known to a social agency before admission. The families of 118, or 46 per cent. of these 254 children, were being actively dealt with at the time we first knew them.

"Our work with these children included 446 visits to the homes, 135 to co-operating agencies. They were followed upon discharge, when necessary, either in the City Hospital Out-Patient Department, or through other medical agencies like the Boston Consumptive Hospital Department, the Instructive District Nursing or Baby Hygiene Associations."

WORCESTER CITY HOSPITAL.—The forty-sixth annual report of the trustees of the Worcester City Hospital states that for the year ended November 30, 1916, the hospital admitted 2,330 patients to its surgical wards, 1,901 patients to its medical wards and 6,074 to the out-patient department. The number of patients admitted to the maternity service was 512. The number occupying private rooms was 598. The training school graduated thirty-nine pupils. The school offers its courses not only to women but to men, who receive the same lectures and instruction as that given to women, with the elimination of the care of women and children and of service in the maternity, children's and isolation departments.

PROTECTION FROM SMALLPOX.—The Health Department of the City of Boston has issued a letter to physicians throughout the State, warning them of the occurrence of smallpox and urging them to advise vaccination of their patients and others. Unvaccinated persons, including all children, should be vaccinated. The letter also asks for the reporting of any doubtful or suspicious eruptions and every case of chicken pox.

TUBERCULOSIS SANATORIA IN MASSACHUSETTS.—The annual report of the trustees of Massachusetts Hospitals for Consumptives states that the four sanatoria under their control have provided beds for nearly 1,100 patients, giving a total of 393,267 days of treatment for 2,525 patients. The waiting list, though not so long as last year, is still distressingly long. There are 250 men and women on the list at the present time. It is necessary for men to wait two months and women a slightly shorter time before they can be admitted. Although local accommodations in the way of municipal hospitals, etc., are constantly being increased, the demand on the State sanatoria is not diminished, but the reverse is true. This does not necessarily mean that tuberculosis in this State is increasing, but is a hopeful sign that more cases than heretofore are being diagnosed and are seeking sanatorium treatment.

Correspondence.

THE BENEDICT TEST.

Boston, June 4, 1917.

Mr. Editor:

Since the introduction of the Allen treatment for diabetes, more and more patients are being educated in the method of testing their urine, which allows them to watch themselves more closely, and better results are naturally obtained. As a result, many drug concerns are making the Benedict solution, which, on account of its being a single solution, is much easier for patients to use.

Recently I have had two instances where the Benedict solution was absolutely unreliable, and for that reason it seems wise to let the medical profession know in order to avoid any serious mistakes. The following, a copy from the card published by Thomas Groom and Company in Boston, and gotten up by Dr. E. P. Joslin, is an exact copy of the card which is given by Dr. Joslin to his patients, giving the correct prescription for the Benedict solution and detailed directions for testing the urine:

FORMULA AND DIRECTIONS FOR THE BENEDICT TEST.

Copper sulphate (pure crystallized) 17.3 g.
Sodium or potassium citrate 173.0 g.
Sodium carbonate (crystallized)* 200.0 g.
Distilled water to make 1000.0 c.c.

* One half the weight of anhydrous salt may be used.

The citrate and carbonate are dissolved together (with the aid of heat) in about 700 c.c. of water. The mixture is then poured (through a filter) if necessary, into a larger beaker or casserole. The copper sulphate (which should be dissolved separately in about 100 c.c. of water) is then poured slowly into the first solution, with constant stirring.

The mixture is then cooled and diluted to one liter. This solution keeps indefinitely.

For the detection of glucose in the urine, about 5 c.c. of the reagent are placed in a test-tube and 8 to 10 drops (not more) of the urine to be examined are added. The mixture is then heated to vigorous boiling, kept at this temperature for one or two minutes, and allowed to cool spontaneously. In the presence of glucose, the entire body of the solution will be filled with a precipitate, which may be red, yellow or greenish in tinge. If the quantity of glucose be low (under 0.3%) the precipitate forms only on cooling. If no sugar be present, the solution either remains perfectly clear, or shows a faint turbidity that is blue in color, and consists of precipitated urates. The chief points to be remembered in the use of the reagent are (1) the addition of a small quantity of urine (8 to 10 drops) to 5 c.c. of the reagent, this being desired, not because larger amounts of normal urine would cause reduction of the reagent, but because more delicate results are obtained by this procedure, (2) vigorous boiling of the solution after addition of the urine, and then allowing the mixture to cool spontaneously, and (3) if sugar be present the solution (either before or after cooling) will be filled from top to bottom with a precipitate, so that the mixture becomes opaque.

It is often convenient to perform the test by placing the tube containing the mixture of the solution and urine in bubbling, boiling water, where it must remain with the water actually boiling for five minutes.

Yours very truly,

F. GORHAM BRIGHAM.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION, FOR THE QUARTER ENDING
MAY 31, 1917.

No contributions.

Previously reported receipts \$7,961.26

Total receipts \$7,961.26

Previously reported disbursements:

1,625 standard boxes of food at \$2.20 \$3,575.00

1,274 standard boxes of food at \$2.30 2,930.20

353 standard boxes of food at \$2.28 804.84

Total disbursements \$7,310.04

Balance \$651.22

F. F. SIMPSON, M.D., Treasurer,
7048 Jenkins Arcade Building,
Pittsburgh, Pa.

RECENT DEATHS.

HOLMES MAYHEW JERNEGAN, M.D., of Boston, died at his home on May 27. Dr. Jernegan was born in Edgartown, Mass., on August 3, 1846, and graduated from the New York Homeopathic Medical College. He began practice in New York City, and after four years removed to Boston, where he had been engaged in his profession ever since. He was lecturer on surgical anatomy and clinical surgery at the Massachusetts Homeopathic Hospital from 1870 to 1873. For five years he was professor of surgery in Boston University Medical School. Dr. Jernegan was a member of the Massachusetts Surgical and Gynecological Society and of the Bostonian Society. He is survived by his widow.

JOHN CHARLES O'BRIEN, JR., M.D., a recently admitted Fellow of the Massachusetts Medical Society, died at his home in Greenfield of pneumonia, following an operation for appendicitis, May 23, 1917, at the age of 26. He was born in Amsterdam, N. Y., was educated in Greenfield and at Tufts College Medical School, 1914, and had served as house physician at Mercy Hospital, Springfield. He had begun practice in the office with his father in Greenfield.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

June 21, 1917

THE MASSACHUSETTS MEDICAL SOCIETY

- THE SHATTUCK LECTURE—THE PHYSIOLOGICAL FACTORS CONCERNED IN SURGICAL SHOCK. *By Walter B. Cannon, M.D., Boston.*..... 859

ORIGINAL ARTICLES

- THE RECOGNITION OF PANCREATIC INSUFFICIENCY, WITH SPECIAL REFERENCE TO THE LOEWY TEST. *By H. Ryerson Decker, M.D., Pittsburgh.*..... 867
- SOME UTERINE CONDITIONS OBSERVED IN 245 POST-MORTEM EXAMINATIONS AT DANVERS STATE HOSPITAL. *By Lawson G. Lourey, A.M., M.D., Boston.*..... 872
- SOME CONDITIONS LEADING TO INCORRECT DIAGNOSIS OF ADENOIDS IN CHILDREN. *By Virginius Dabney, M.D., F.A.C.S., Washington, D. C.*..... 875
- A NOTE ON BÄRANT'S SIGN IN EPILEPTICS AND IN SCHOOL CHILDREN. *By Edward A. Tracy, M.D., Boston.*..... 877

BOOK REVIEWS

- Dye's Surgical Handicraft. *By W. H. Claxton-Greene, F.R.C.S.* 878
- A Laboratory Guide in Pharmacology. *By Ronald Sellmann, M.D.*..... 878
- A Manual of Otolaryngology for Students and Practitioners. *By Charles Edwin Perkins, M.D.*..... 878

EDITORIALS

- THE MASSACHUSETTS MEDICAL SOCIETY..... 879
- THE ROLE OF THE INTERNAL SECRETIONS IN THE FEMALE FUNCTIONS..... 880
- MEDICAL REMINISCENCES OF WATERLOO..... 881
- A FRENCH SURGEON AND POET..... 882
- MEDICAL NOTES..... 882

MISCELLANY

- UNIVERSITY OF CHICAGO MEDICAL SCHOOL..... 886
- SANITATION AND PUBLIC HEALTH IN SOUTH AMERICA..... 887
- FIRST NATIONAL MEDICAL CONGRESS OF THE ARGENTINE REPUBLIC..... 889
- NOTICES, APPOINTMENTS, ETC..... 890

The Massachusetts Medical Society.

THE SHATTUCK LECTURE.*

THE PHYSIOLOGICAL FACTORS CONCERNED IN SURGICAL SHOCK.

BY WALTER B. CANNON, M.D., BOSTON,

George Higginson Professor of Physiology, Harvard Medical School.

OF the practical problems presented by clinical medicine, which are still baffling, one which is of unusual interest, from the physiological point of view, is that of surgical shock. It is of great practical significance; it is a condition of vital concern to individual human beings; it is mysterious in its onset and nature, and it presents a challenge as to the explanation of its nature which has been taken up by many investigators.

In the literature of surgical shock, complaint is often expressed that there is no clear definition of the condition. It seems to me that in such a complex as shock presents, definition is not a prime requisite. The important matter is to obtain a careful description of the facts of observation. Fortunately, we have such descriptions from competent clinical observers. The following is an abbreviation of an account

given by Fischer: "The patient, a strong and perfectly healthy young man, was struck in the abdomen by the pole of a carriage drawn by runaway horses. We have not been able, after careful examination, to find any trace of injury to any of the internal organs. Nevertheless, the grave symptoms and the alarming look which he still presents made their appearance immediately after the accident. He lies perfectly quiet and pays no attention whatever to events about him. The pupils are dilated and react slowly to light. He stares purposelessly and apathetically straight before him. His skin and such parts of the mucous membranes as are visible are as pale as marble, and his hands and lips have a bluish tinge. Large drops of sweat hang on his forehead and eyebrows, his whole body feels cold to the hand, and a thermometer indicates a degree and a half Centigrade in the axilla and a degree in the rectum, below the normal. Sensibility is much blunted over the whole body, and only when a very painful impression is made on the patient does he fretfully pull a wry face and make a languid defensive movement. If the limbs are lifted and then let go, they immediately fall as if dead. The urine is scanty and dense, but free from any traces of sugar and albumin. The pulse is almost imperceptible and very rapid. The arteries are small and the tension very low. The patient is conscious, but replies slowly and only when repeatedly and importunately questioned. On being thus questioned, he complains of cold, faintness, and deadness of the extremities. His respiration is characterized by long, deep, sighing inspirations, alternating with very super-

* Read before the Massachusetts Medical Society, June 12, 1917, in the absence of Dr. Cannon, by Dr. David Cheever.

ficial ones, which are scarcely visible or audible. While being brought to the hospital he vomited several times, and nausea and hiccoughs still remain. His pallor, cold skin and hoarse voice, immediately recall the appearance of a cholera patient; characteristic dejections are alone wanting to make the resemblance complete." This description by Professor Fischer accords closely with the summary of the state of shock given by Sir W. Watson Cheyne: "The patient is usually found lying in a state of complete muscular relaxation, or if he makes any movements they are very irregular and feeble. The face is pale and drawn, the pupils dilated. There is sweating about the head, the reflexes are very slight, and there is diminished sensibility, but not absolute unconsciousness. The patient can answer questions when spoken to, but if not disturbed will generally lie in a semi-conscious condition. The respirations are feeble, irregular and sighing. The pulse is small, frequent and dicrotic. At first the pulse rate is generally slowed; and increased frequency of the heart beat is regarded by some as a sign of the commencement of reaction. The skin is cold; the temperature subnormal."

These careful descriptions of the state of shock give clearly the main facts which have been made out by clinical observation; and the problem which is presented to the investigator is that of accounting for these facts. In unraveling any such complex, an effective procedure is that of endeavoring to analyze the phenomena into those which are primary and those which are secondary, or even tertiary, in their relations to the others. I propose that we take up the phenomena seen clinically in shock, and endeavor to determine what are the more essential features and what the less essential, and also the interplay between them.

The various signs and symptoms exhibited by a person in shock can be analyzed into four main groups. These are disturbances of sensation, of motion, of respiration, and of the functions and control of the circulation. The thirst which is present, the sweating, the lowered temperature, and the pupillary dilatation may be regarded as incidental. We can promote our inquiry as to which are the more fundamental and which the less fundamental of these disturbances if we inquire in each case regarding the part which the disturbance in question might play in accounting for other disturbances.

DISTURBANCES OF SENSATION.

All observers have noted that persons in shock have a diminished sensitiveness to stimulation. In the descriptions given above, the blunting of sensation, the apathy and the semi-consciousness were emphasized. What light can physiology throw on this condition of the organism?

In the first place, it is known that repeated stimulation of a given region or of a given group

of afferent nerves will produce a condition in which there is a lessened capacity of the nerves to transmit the impulses which the stimulation repeatedly starts. This fact was clearly established by Sherrington, who has determined that the ingoing impulses are, in all probability, blocked at the junction or synapse between the afferent nerve cells or neurones and neurones lying wholly within the central nervous system. The phenomenon of blocking is best accounted for as due to an increase of the natural resistance at the synapse to such a degree that the impulses fail to pass. It is obvious that the body as a whole would thus be protected against the effects of repeated stimulation along a given course. Sherrington's observations, to be sure, were made by stimulating a very limited field, and consequently there was a limited effect. There is evidence, however, that a condition similar to that observed by Sherrington can be produced much more diffusely by certain stimulations of the body. For example, Meltzer and Kast observed that exposure of the intestines caused a distinct reduction of the sensitiveness of the entire body, so that the animal became notably less responsive. A restlessness, previously existent, disappeared, and though the eyes were open and the lid reflex could be evoked, the animal was perfectly quiet and strikingly indifferent to stimulation. A strong stimulus applied to the skin would awake the animal, but it at once sank back into a lethargic condition. Meltzer interpreted these observations as due to inhibition, chiefly because under the conditions of his experiments the motions of the alimentary canal are inhibited; an effect, however, which is due to *activity* of the sympathetic system. It seems unnecessary to make a rather vague assumption of central inhibition, when increased synaptic thresholds would account for the phenomenon reasonably and in accordance with other observed physiological facts. The effect of manipulation of the intestines in reducing the sensitiveness of animals has been observed also by Janeway and Ewing, who report that continued manipulation will render an animal so insensitive as to permit the discontinuance of anesthesia. A general blocking of afferent pathways, best conceived as due to increased synaptic resistance, may, therefore, be invoked as an explanation for the blunted feelings of the victim of shock.

In the state of shock, as we have seen, the blood pressure is low. Further evidence that increased synaptic resistance may be present under such circumstances is found in some experiments made by one of my students, E. L. Porter, who studied the effect of low blood pressure on the minimal strength of a stimulus required to evoke a reflex in the spinal cord. He found that with a uniform elevation of arterial pressure the threshold stimulus for the reflex remained practically uniform. If then the blood pressure was lowered by bleeding, the threshold

promptly rose to a higher level, so that a considerably greater strength of stimulation was required in order to call the reflex forth. Thus, in one instance, the minimal stimulus rose from less than 40 units to over 110 units, solely as a consequence of the diminished blood supply. In all probability this effect is due to the influence of lack of oxygen or increase of carbon dioxide, for Porter found that either of these conditions had the effect of raising the threshold. If, after hemorrhage, the blood supply is restored, or if in the absence of oxygen, oxygen is again given, or if, after an increase of carbon dioxide that gas is diminished, the threshold of the reflex response returns to the former level with a fair degree of promptness. The time during which the nerve cells of the central nervous system will withstand a diminished blood supply without undergoing changes from which they cannot recover, needs further investigation. As Stewart and his co-workers have shown, however, these cells may endure total anemia for many minutes and still recover their capacity to function. But the anemia may produce definite dissociations of the neurones, so that when the blood supply is renewed they may not completely recover their ability to transmit impulses from one to another. Thus after total anemia, reflexes may again be active, but, whereas they were formerly bilateral, they are now only unilateral.

All this evidence taken together indicates that severe injury, especially injury of the abdominal region, and also a low arterial pressure, are capable of producing changes in the central nervous system which we can reasonably interpret, on the basis of present physiological concepts, as due to increased synaptic resistance, and which would fully account for the apathy and insensitivity of the shocked individual.

DISTURBANCES OF MOTION.

Bodily movements require the discharge of nerve impulses through neurones of the central nervous system out into muscles. There is no evidence that I am aware of that ingoing sensory impulses alone will disturb the synapses of the outward leading motor path. Sherrington found that after repeated stimulation had established a block in the stimulated afferent path and consequently had caused failure of the reflex, transference of the stimulus to a new afferent path would bring forth the reflex with its original vigor. The motor mechanisms, therefore, appear to be less affected than the sensory, by recurrent stimulations. On the other hand, a low arterial pressure may result in such an inadequate supply of blood that muscles become ineffective; and in all probability the nerve cells innervating the muscles and likewise the synapses, that intervene between nerve cells, may, as a consequence of relative anemia, suffer impairment of function. The evidence for this statement comes from observations made in the

Harvard Physiological Laboratory by C. M. Gruber, who studied the effect of low arterial pressures on the functions of muscles. He found that as the pressure is lowered, there is practically no effect until approximately 90 mm. of systolic pressure is reached. That seems to be a critical point. And if the pressure is reduced below that height, the muscle as a contracting organ becomes definitely less capable of doing work.

The mechanism for production of bodily heat when the temperature tends to fall involves reflex shivering and greater muscular activity. The fall of temperature in the shocked individual, therefore, may be regarded as a phenomenon secondary to the reduction of reflex responsiveness and to the muscular flaccidity.

The general relaxation of the individual in shock, his irregular and feeble movements, the slowing and weakening of central nervous functions, are all indicative of an increased resistance at the synapses or of a diminished capacity to function on the part of nerve cells or muscles, a change which, as indicated above, can reasonably be assumed to be secondary to their impaired nutrition.

DISTURBANCES OF RESPIRATION.

The respiration of a patient in the state of shock is of the typical superficial, rapid type seen in certain toxemias, and especially after severe hemorrhage. The patient breathes with extreme rapidity, with occasional deep sighs or gasps to break the rapid flutter. Yandell Henderson has suggested that respiration is a primary factor in shock, indeed that pain gives rise to such extremes of pulmonary ventilation as to diminish the carbon dioxide content of the blood, and thus to produce an acapnia to which he ascribes the circulatory phenomena of the shocked case. Considerable doubt is thrown upon Henderson's claims by the character of the respiration actually seen in shock. Only deep and vigorous ventilation of the lungs, very different from that of shock, results in a marked diminution of the carbon dioxide content of the blood. As Edsall has pointed out, with superficial respiration the gaseous exchange occurs more and more in the "dead space"—in the nostrils, trachea and bronchi—just in so far as the respiration becomes less and less deep. The effect, therefore, of continued shallow respiration would be to increase rather than to diminish the carbon dioxide content. Furthermore, Short has investigated the carbon dioxide factor in cases of shock and has found that the quantity in the venous blood is not reduced. Henderson's claim was that he succeeded in producing shock in animals by vigorous ventilation of the lungs, but in all probability the effect was due, not to reducing the carbon dioxide of the body, but to mechanically obstructing the return of blood to the heart, and to consequent failure of the circula-

tion. Only by such extreme inflation of the lungs as would produce that effect were Janeway and Ewing able to repeat Henderson's observations. The evidence for Henderson's theory is not substantiated by other investigators. His view, therefore, that rapid respiration plays a primary rôle, may reasonably be regarded as erroneous.

If the changes in respiration are not primary, they are probably secondary to some other condition. In a previous Shattuck Lecture, given by Edsall, in 1912, he suggested the probability that excessive accumulation of acid substances may over-irritate the respiratory centre and thus produce increased frequency of respiration. This suggestion is pertinent to an explanation of the breathing in shock. The amount of blood circulating in the shocked individual is greatly reduced; the oxygen-carrying power of the blood, therefore, is diminished; though metabolism is probably reduced, the products of metabolism may fail to be properly oxidized; and there may be some increase in the hydrogen-ion concentration, an acidosis, through the development of fixed acids. Furthermore, the diminished oxygen supply to the respiratory centre itself may render it especially irritable. It is well known that reduction of the oxygen carried by the blood to the central nervous system will cause the motor cells to send the muscles into spasms just before there is a failure of action. A continued low oxygenation of the respiratory centre might keep it, therefore, in a condition of hyper-irritability, and this, with an increased hydrogen-ion concentration might be expected to produce the typical changes seen in shock and severe hemorrhage.

Rapid, superficial breathing, as Edsall has pointed out, diminishes the range of pressure-variations in the thorax and abdomen below that of normal respiration, and thus reduces the extent of the respiratory waves in the general arterial pressure. Indeed, experimentally, very rapid breathing may abolish entirely the respiratory blood-pressure changes. Conceivably this is an important safeguard for the heart, because, with a greatly reduced arterial pressure, a further diminution of the pressure, which would naturally attend each deep inspiration, might make such reduction in the flow of blood through the coronary arteries as dangerously to impair cardiac contraction. On the other hand, it is a part of the bad physiological state which constitutes shock, that the aid given the heart by the diaphragm in pumping the blood from abdomen to thorax is largely lost when respiration becomes rapid and shallow. And for this reason, and also because the skeletal muscles do not contract, all the work of maintaining the circulation falls on the ill-nourished heart.

We may conclude from these considerations, I think, that the respiratory changes are not primary but secondary in character, and that, though they are probably suitably adjusted to

the circulatory conditions which actually prevail in shock, they fail to retain factors important as accessories to the heart in promoting circulation of the blood.

DISTURBANCES OF CIRCULATION.

Clinically the signs of shock which can be attributed to circulatory changes are, as we have seen, a low arterial pressure, pallor, a small thready pulse and a cold skin. The pallor and the cold skin indicate that the blood no longer circulates abundantly in the peripheral vessels. The low arterial pressure has been ascribed to a lack of tonic contraction of the arterioles. But the small pulse indicates that the heart actually has only a slight amount of blood to put forth with each contraction. And since this factor alone would account for the low pressure, we may, temporarily at least, assume that the diminished output from the heart is primary in producing it. Obviously we are here dealing with various relations of the elements which maintain the normal head of pressure in the arteries. In order to judge carefully, it will be necessary to consider in some detail the rôle which each one of them plays. These are the contracting heart, the bulbar vasomotor mechanism affecting the tonicity of the vessel walls, and the volume of the blood.

The Cardiac Factor. The cardiac factor in shock has received some attention, especially from Howell, who has suggested that there is a paralysis of the cardio-inhibitory centre. Such a paralysis would naturally lead to a rapid beating of the heart. That the cardio-inhibitory centre is not unresponsive, however, was proved by Mann. He stimulated the central end of the cut vagus nerve and found that the characteristic reflex slowing of the heart occurred as usual. Furthermore, the administration of adrenalin caused dropped beats, just as under normal conditions when adrenalin is allowed to affect the centre. It is known that increase of intracranial pressure stimulates the cardio-inhibitory centre and slows the heart. This effect, likewise, can be seen in experimental shock. The nervous control of the heart, therefore, is not impaired. Indeed, the rapid cardiac beat with a low arterial pressure is precisely what is to be expected according to Marey's law of the reciprocal relation between heart rate and arterial pressure.

The heart itself is not defective in the shocked individual, as can be shown experimentally. Mann raised the arterial pressure to a high level by injecting adrenalin, and also by cerebral compression, and found that as soon as the cardiac muscle was properly supplied with blood it promptly met the situation and contracted with vigor.

Low arterial pressure may incapacitate the heart, for Markwall and Starling have found that when systolic pressure falls below 80 mm. of mercury, the cardiac contraction begins to weaken. Moreover, as Evans has shown,

when the hydrogen-ion concentration of the blood increases, the heart relaxes more and more and beats less energetically. The important considerations, therefore, with reference to the cardiac factor in shock, are to increase the volume of well oxygenated circulating blood so as to lessen the dangers of acidosis and to raise arterial pressure to such a degree as to provide a proper flow through the coronary vessels.

The Vasomotor Factor. Since the cardiac factor is not primary, nor any of the other factors that we have thus far considered, let us turn our attention next to the blood vessels. We now come to questions which have been the subject of a great deal of investigation during the past few years. The natural inference of observers, when they found that arterial tension was very low, was to assume that this was due to such relaxation of the arterioles that the blood met greatly decreased resistance in its passage through them, and in consequence there was no support for the head of pressure which the heart might otherwise develop. This was the view long ago expressed by Mitchell, Keen and Morehouse. The view has recently been elaborated by Crile in extensive investigations, both physiological, on blood pressure, and histological, on nerve cells taken from shocked animals. The mere fact, however, that arterial blood pressure is low is not proof that the vasomotor centre is inactive or exhausted, for arterial pressure is low also in consequence of hemorrhage,—that is, when there is only a small volume of blood for the heart to put forth as it contracts. Furthermore, as has been proved by W. T. Porter and his collaborators, both pressor and depressor reflexes still occur even when an animal is in extreme shock. The depressor effects prove that some tonic activity of the centre is still present, for otherwise its action could not be depressed; and the pressor responses reveal that the centre is still capable of increased action. These observations by Porter have been confirmed by Seelig and Lyon and by Mann.

Since the vasomotor centre is not exhausted, the question arises as to its actual condition in shock. The evidence obtained in recent observations points towards an effective contraction of peripheral and visceral arterioles in the shocked state. Indeed, the pallor of the victim of shock indicates peripheral vasoconstriction. And the sweating and dilated pupils indicate that the sympathetic system, as a whole, is active. It is not necessary, however, to take indications merely, for Seelig and Lyon found that severing the nerve to a blood vessel which, in a shocked animal, was bleeding, resulted in a larger flow of blood from the vessel,—a result which could occur only because of relaxation of a tonically contracted structure. Later Seelig and Joseph found that if the blood pressure in a rabbit which was in a state of shock was suddenly raised by clamping the aorta, the blood greatly distended the arteries of

one ear whose nerves had previously been cut, but failed to distend the arteries of the other ear, whose nerves were still connected with the vasomotor centre. In other words, the centre was holding the arteries in effective contraction. Similar observations have been made by Mann on internal organs. And Morrison and Hooker have noted that the organs of an animal in shock have an outflow from their vessels when perfused which is less than that under the same pressure in normal conditions. Severance of the nerves of such an organ results in an increased outflow. All these observations taken together definitely prove a continued and efficient activity of the vasomotor centre, rather than its exhaustion.

It must be granted that, though not exhausted, the centre may be depressed, for, according to Sollmann and Pilcher, a moderate hemorrhage lessens the capacity of the centre to control the vessels. It is clear, however, that such depression might not be of significance in a condition in which the arterial pressure was extremely low, and in which, therefore, the labor to be performed would not be great.

There remains to be considered the histological evidence for exhaustion which has been brought forward by Crile and Dolley from examination of nerve cells taken from shocked animals. Such evidence is subject to many grave mischances. For example, other investigators have reported that the cytological changes described as occurring characteristically in shock are found well within the range of normal variations of neurone appearances. Furthermore, as Dolley himself has admitted, hemorrhage produced the same changes in nerve cells that are seen in the shocked animal. Since both hemorrhage and shock are accompanied by a very low blood pressure, the admission immediately permits the conclusion to be drawn that the alterations in nerve cells, even if genuine, may reasonably be the result of shock rather than its occasion.

In connection with this discussion of the hardness and capacity of endurance of the vasomotor centre we should remember that all the testimony at hand points to its being extremely resistant to adverse conditions. Studies made by Pike, Guthrie and Stewart have revealed the fact that this centre is more capable of withstanding the adverse influences of anemia than any other vital bulbar centre—the respiratory, the cardio-inhibitory, or the swallowing mechanisms. It is well known, furthermore, that when there is danger of shutting off the blood supply to the vasomotor centre, it becomes immediately more active, so as to produce stronger contraction of the arterioles. Thus when increase of cerebral pressure tends to deprive this centre of its nutriment, it contracts the arterioles. In consequence, the arterial pressure is promptly raised. It may be maintained at a high level for a considerable period; Cushing has reported a case of fracture of the

base of the skull in which the arterial pressure was held higher than 160 mm. for five days. Obviously we must respect the vasomotor centre as an agent whose functions are extremely stable and whose capacities for continued action are its most outstanding feature. And only adverse circumstances are required in order to make it spontaneously become even more active than normal.

The Factor of Blood Volume. If, then, the vasomotor centre is efficiently at work, why does not the blood accumulate in the arteries? The answer to this question lies, I believe, in the diminished volume of blood which is in active circulation. Henderson has clearly pointed out the necessity of a sufficient supply of blood to the heart in order to maintain the arterial pressure at its normal level. In the absence of this supply, as, for example, in hemorrhage, the arterial pressure falls to a low level, and can only be permanently raised by introducing more fluid into the circulatory passages.

A further question now arises, as to where the blood lies in the shocked individual. There is general agreement that it is found in the capacious splanchnic area. One needs only to put a clamp on the portal vein to demonstrate that in a short time the blood pressure will fall to the same degree that it falls in severe bleeding. The capacity of this area for storing the blood is so great that, as has long been recognized, one may bleed to death in his own splanchnic vessels. The evidence for the gathering of blood in this region is found in observations on the mesenteric veins which, as Mann, and also Morrison and Hooker have pointed out, become very conspicuous in the shocked animal. The latter observers also took occasion to weigh an isolated loop of the gut as an animal went into a state of shock and found that the weight gradually increased.

That the quantity of the blood in the portal differs more or less from that in the general circulation is probable from the observations which Mann has made on the specific gravity of blood in shock, which he found higher in the portal vein than elsewhere. According to Corbett, who quotes McClendon, the blood in the general circulation in shock has no noteworthy increase of hydrogen-ion concentration. And the Guthries report that the circulating blood is not notably changed in its specific gravity, concentration or viscosity in a shocked animal. It is quite possible, however, that the blood which accumulates in the splanchnic region and which may be modified by gases absorbed from the intestines, has a higher carbon dioxide content than that found in peripheral vessels. Undoubtedly the portal blood is venous rather than arterial, and for that reason alone would be, in any case, somewhat changed in the direction of acidity.

The acidity or venosity of portal blood may be an important element in the continuance of the state of shock. Hooker has observed that carbon dioxide in minimal effective amounts always

causes relaxation of vascular muscle, whereas oxygen is essential to the rhythmicity of the muscle and to the maintenance of its tone. These conclusions are based on observations made on the portal vein of the rabbit and the cat. Gaskell and also Bayliss have found that other acid, as, for example, lactic acid, has the same effect as carbox dioxide. Obviously, if the venous blood stagnates in the portal vein, and has a large content of carbon dioxide, the condition would be one which would favor relaxation rather than contraction of the vessel wall. Furthermore, the tendency to acidosis, due to the diminished volume of blood in the general circulation, would lead to an increase of the evil effects. These facts are evidently pertinent to the condition that prevails in the region where blood accumulates in shock, for they are favorable to relaxation and consequently to greater capacity of the portal area, especially in the large vessels where vasoconstrictive impulses are least effective.

THE CENTRAL PROBLEM IN SHOCK.

Our review of the conditions which prevail in the shocked individual has shown that the diminished sensitivity, the lack of muscular tone with indisposition to move, and the rapid weak pulse, the sweating, the lowered temperature, may all be accounted for as secondary phenomena. The capacity of the central nervous system of returning to its normal functions if properly supplied with blood suggests that not only sensation, but also reflexes, spontaneous movements, normal respiration, more vigorous cardiac activity, and a normal control of the blood vessels by the vasomotor centre, may all be recovered if only the blood can be restored to the general circulation in sufficient volume to bring to the needy tissues their required nutrition. As Mann has pointed out, the conditions of shock and of severe hemorrhage are practically identical, and just as in hemorrhage, blood is needed to render the individual normal, so in shock the restoration of the stagnant blood to general circulation is the prime requirement.

The question now arises as to what prevents the blood gathered in the splanchnic area from returning to the general circulation. The effect of blood laden with carbon dioxide in relaxing vessels and making them more capacious has already been noted. Besides this, however, it seems to me that there is another factor of considerable importance for the continuance of the state of shock which has thus far been overlooked. We must remember that the portal circulation is almost unique in the body. The portal vein lies between two capillary regions—the capillaries in the stomach and intestines, pancreas and spleen, which deliver their blood into the mesenteric branches of the portal, and the capillaries of the liver, through which the blood must flow before being gathered in the hepatic veins and carried to the inferior vena

cava. Work must be done to drive the blood through these fine divisions of the vessels. There is a drop of blood pressure from the aortic level at 120 mm., or thereabouts, to the portal level, which is approximately 10 or 12 mm. of mercury, and a further drop in passing through the liver to approximately zero pressure in the inferior vena cava. The drop of pressure from the aorta to the portal vein is due to a using up of the energy of arterial pressure in overcoming frictional resistance in the stomach, intestines, spleen and pancreas. The drop of pressure from the portal vein to the inferior cava is due to a using up of the energy of the portal pressure in forcing the blood through the liver. Obviously, considerable force is required to keep the circulation going through the hepatic channels.

There has long existed evidence that the branches of the portal vein in the liver are subject to nervous control. Bayliss and Starling, in 1894, brought circumstantial indications of a nervous government of the portal branches sufficient to dissociate the portal area from influences affecting the rest of the circulation. Cavazzani and Manca, the next year, reported that asphyxia could definitely lessen the rate of flow of fluid through perfused liver venules, a result which was accounted for by the well-known increase of activity of the vasomotor center in asphyxial conditions. And later Schmid, and also Opitz, showed that stimulation of the portal nerve plexus of the liver, electrically or the introduction of adrenalin into the portal vein, would cause a considerable increase in the resistance of the blood flow through the hepatic vessels. From these facts it is reasonable to conclude that the way out from the portal area is subject to vasomotor impulses.

As we have already noted, any condition which endangers the blood supply and the proper oxygenation of the vasomotor centre results in an increased discharge of impulses from it. The observations already cited, proving that there is a constriction of the arterioles in shock, reveal the response of the centre when the blood supply is low. All the facts we have at hand point towards a diffuse influence of the centre on the blood vessels which it innervates,—in other words, it does not contract blood vessels here and there and leave others uncontracted. And since the arterioles of the abdominal viscera are contracted when the arterial pressure is low, there is every reason to believe that the fine branches of the portal vein in the liver are likewise contracted. Indeed, the experiments of Cavazzani and Manca, mentioned above, confirm the correctness of this inference. Contraction of these small hepatic vessels would be effective in restraining the blood from its onward passage, *unless the pressure from the arteries is high*. But that important factor is lacking. *Thus if the blood is once accumulated in the portal area to such a degree that the vasomotor centre becomes more active, the blood would*

naturally be trapped in this area and held there, chiefly because the centre is stimulated to action and the arterial drive is lost. In other words, there would be a critical point in this accumulation of blood in the splanchnic area at which a vicious circle would be entered; the vasomotor centre not sufficiently supplied with oxygen, would become more active, and by shutting up more blood between the two capillary regions of the portal area deprive itself still further of its required blood supply, and reduce still further the arterial pressure. From a consideration of all the facts at hand, it seems to me that this is the most remarkable explanation for the stagnation of the blood in the splanchnic vessels in shock.

If the views which I have expressed above are correct, then there seems to be a greater hope for the treatment of shock than has been offered by recent investigators. In a paper published in 1914, Short declared that it was hopeless to attempt to do anything for the shocked victim. He admitted that something might be done for the paralyzed vasomotor centre and that carbon dioxide could be given for acapnia, but what, he asked, could be done for exhaustion of the nerve cells of all the vital centres—the condition which Crile especially has assumed to be present. As the studies of Stewart and of his collaborators have demonstrated, however, the changes that occur as a result of diminished blood supply are, within limits, reversible changes. And of all of the vital centres of the medulla, those controlling the circulation are among the most resistant to anemia, and are the first to recover when an adequate blood flow is returned to them. They and all the other disturbed organs are suffering from inadequate provisions. The sensory synapses, the motor cells, the heart, the respiratory mechanism, are all in need of blood. The strategically important move, obviously, is to bring back into the general circulation *as promptly as possible* the blood which is stagnant between the two capillary regions at either end of the portal area.

The need of improving the circulation in shock has long been recognized. Such measures as injecting warm salt solution, introducing adrenalin into veins, placing the patient in a slanting, head-down position, bandaging the limbs, and compressing the abdomen, have for many years been employed in treating shock. In the light of present knowledge it may be questioned whether any of these methods strike effectively at the disturbed conditions in the portal area. Salt solution raises arterial pressure for a time, but soon fails, as it passes out through capillary walls into tissue spaces. Adrenalin, likewise, temporarily raises arterial pressure; not by driving blood out of the veins, however, but by inducing extreme contraction of the arterioles. There is no evidence that it affects the portal area in any favorable sense. Indeed, according to the early observations of

Oliver and Schäfer, recently confirmed by Hartmann, adrenalin causes especially contraction of the splanchnic arterioles, while arterioles elsewhere are distended,—an effect just the reverse of that needed to drive the portal blood through the liver. What happens in the splanchnic vessels under such circumstances was shown by Schmid, who found that the flow of blood through the portal vein could be brought to a complete standstill by intravenous injection of adrenalin. This agent, therefore, does not hit the mark. In judging the effects on the portal area of abdominal compression and the inclined head-down posture, we must not forget that the abdominal contents move freely, and exert a hydrostatic pressure equal to that of the blood itself. If the blood has already largely accumulated in the portal region, and vasomotor activity, unopposed by any considerable arterial pressure, is tending to hold it there, abdominal compression and gravity cannot be dependable influences. For, just in so far as compression is applied, or the body is inclined head-downward, the pressure on the liver, through whose capillaries the portal blood must pass, is increased equally with the pressure on the vessels themselves, and probably, therefore, nothing tending to empty the portal vein will result. The inclined, head-downward position may be useful, however, in bringing the influences of gravity to bear on the blood in the systemic veins of the legs and trunk, and thus help to return it to the heart. It would also add a slight hydrostatic element to the arterial pressure in the brain. Restriction of the systemic circulation by bandaging the limbs would have similar effects. That these aids may be favorable to restoration of normal conditions, especially at the critical stage, when the vicious circle, mentioned above, may be entered or escaped, cannot be denied. But, as we have seen, they fail to meet the problem presented by the capacious splanchnic area. To drive blood from this area, some agency must be employed which will affect directly the portal vein and its branches.

At present it is impossible to state with exactness what may be done practically to control the portal area. Theoretically, however, I should like to point out certain factors which seem to me important, and which may be employed to restore normal conditions. The portal vein and its branches have smooth muscle in their walls. This smooth muscle is highly contractile. One needs only to endeavor to introduce a cannula into one of the small branches of the vein to observe that it will contract to an extremely fine tubule hardly larger than a thread. The capacity of muscular contraction to diminish the lumen is present, therefore, in the vessel wall.

The smooth muscle of the wall is separated on the one side from the blood by the intima, but the vessel lies in the mesentery, and the smooth muscle is, therefore, covered on the other side by only a thin serous coat. It is possible,

consequently, that the smooth muscle might be affected by the application of a constricting agent applied to the outer covering. The introduction of a constricting fluid into the abdominal cavity in considerable bulk would make its way among the loops and folds of intestine and mesentery and come into relations with the vessels which contain the stagnant blood. And if the constricting agent penetrates to the smooth muscle, the vessel should, by its contraction, put such pressure on the contained blood as to drive it past the portal branches of the liver and on into the general circulation. A stronger solution of such an agent may be employed in the abdominal cavity than would be present in the circulating blood because it would not be diluted by the volume of the blood itself. Thus there might be effective contraction of the portal vein and its branches, as they lie outside the liver, by an agent acting precisely where there is need for action, and not diffusely over the whole body.

An agent effective in causing contraction of smooth muscle, which is found naturally in the body, is pituitrin. I do not wish to elaborate at the present time on the possibility of using pituitrin, as above indicated, in shock cases. The possibility is evident, however, because pituitrin appears to have a special affinity for smooth muscle, causing such muscle to contract whenever brought into relation to it. In the abdominal cavity it would cause contraction of the smooth muscle of the intestines and thus bring pressure to bear on the radicles of the mesenteric veins lying beneath the intestinal muscular coats. It would also contract the smooth muscle of the larger veins. But before anything definite and practical can be made of this suggestion, it must be tested out carefully on a considerable scale. This I hope to do in the course of future work, and if favorable results arise from these tests, I shall report on them.

For the present I wish merely to leave with you the main results of the analysis of shock which we have been through. We have seen that evidence favors considering the altered sensitivity of the patient, his indifference to surroundings, his tonelessness, his hurried respiration and rapid heart, as secondary to the low arterial pressure, for the same alterations of function are observed in severe hemorrhage. In shock, however, the blood is lost from the circulation by accumulating in the portal area, an area which is unique in lying between two capillary regions, and the exit from which is governed by vasomotor influences. Since low blood pressure increases vasomotor activity, the blood accumulated in the portal area may be trapped between the contracted splanchnic arterioles and the contracted portal venules in the liver. The central problem of shock, therefore, is to return the stagnant blood to the circulation, in order to give the heart and nervous system their proper

nutriment. The methods thus far employed do not approach this problem by direct attack. And I suggest in closing that an intra-abdominal therapy, the use of a constricting affecting directly the smooth muscle of the portal vein and its branches, may be developed, which will drive back into currency the idle blood.

Original Articles.

THE RECOGNITION OF PANCREATIC INSUFFICIENCY, WITH SPECIAL REFERENCE TO THE LOEWI TEST.

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THERE are no more complex problems in the field of medicine and surgery than those concerned with the recognition and treatment of pancreatic insufficiency. This is not surprising in view of the fact that many matters pertaining to the structure and functions of the pancreas are yet unsettled. For example, there is still a difference of opinion as to whether the islands of Langerhans are groups of resting acinar cells, or have independent origin and function. Again, the matter of the internal secretion of pancreas and its relation to the internal secretions of other organs is far from being completely understood.

From a clinical standpoint there is no pathognomonic pancreatic symptomatology. The symptoms of acute or chronic disease may either simulate or be overshadowed by symptoms due to disease in the neighboring colon, stomach, duodenum, or gall-bladder. At times there will be fairly definite evidence of pancreatic insufficiency—for instance, "the fatty stool"—but more often this disturbance will occur late, perhaps so late as to put the individual beyond the aid of medical or surgical therapeutics.

At operation of course it is possible to recognize gross pancreatic lesions such as cyst, tumor or abscess, but many surgeons feel, as we do, that it is not possible to tell by direct palpation and inspection of the pancreas the extent or severity of an inflammatory process. A hard pancreas does not necessarily mean a diseased pancreas. Such knowledge can be obtained with certainty only by microscopic study of sections of the gland. At times it becomes of considerable import to the surgeon to know, in the course of other operative procedure, whether or not the pancreas is diseased. For instance, it may determine his decision for or against drainage of the biliary ducts. One has only to go through the tragedy of a fatal case of pancreatitis to hope that there is something in surgical prophylaxis in these cases, and, secondly, to wish that

there might be some definite criterion by which disease of the pancreas might be recognized early.

Many laboratory tests have been devised to aid the clinician in the recognition of pancreatic insufficiency. In a recent comprehensive review of the subject, to which we are indebted for many of our data, Sladden discussed twenty of the more important methods of examination.

It is beyond the limits of this paper to give these more than a brief discussion, with the exception of the adrenalin test of Loewi, with which we have had considerable personal experience.

I. TESTS OF EXTERNAL SECRETIONS.

Oil Test Breakfast. This method of examination was proposed by Boldyreff and Volhard when they found in experimental work on dogs that olive oil introduced into the stomach caused a regurgitation of duodenal contents. 200 cc. to 250 cc. of olive oil or cream are administered, and in from 30 to 45 minutes the stomach contents, which have been rendered less acid by milk of magnesia (as suggested by Lewinski) are removed, and the tryptic activity ascertained. One fault with this test is that many patients cannot swallow or retain the oil. In others regurgitation from the duodenum does not take place, and, finally, gastric juice is known to inhibit tryptic activity, as also will carcinoma or leucocytic ferments, if present.

Duodenal intubation offers an ideal method in theory, because it seeks to recover pure pancreatic juice and unmixed ferments. The Einhorn duodenal catheter or modification is given the patient to swallow at night, and duodenal contents are aspirated two and one-half hours after a test meal of eight ounces of milk the next morning. The activity of trypsin, diastase and lipase is then determined. Except in cases of pyloric obstruction or pylorospasm, it is not difficult to obtain pancreatic ferments in this way. The main criticism of the method is directed to the wide variations in the activity of the enzymes under normal conditions. Chace and Meyers think it is so variable as to preclude diagnosis of pancreatic interference, except possibly achylia pancreatica. Crohn, on the other hand, working at Mt. Sinai Hospital, New York, believes duodenal intubation to be the most valuable method in recognizing pancreatic disease, and we are inclined to agree. His conclusions, based on a study of 120 cases by this method, are: 1. Diminution of the enzyme activity of the pancreas is a reliable sign of organic disease of the gland, especially in the acute and chronic intra-acinar types of inflammation. 2. Occasionally, though rarely, a diminution of ferments occurs as a symptom of advanced organic disease elsewhere in the body. 3. Roughly, the diminution of ferments is directly proportional to the extent of organic destruction which has taken place. 4. Some cases of pancreatic disease, not associated with wide-

spread destruction of the parenchyma, continue to furnish a secretion of normal enzyme activity.

Glutoid Capsule Test of Sahli. Sahli administers a gelatine capsule specially hardened in formation, to resist action of the gastric juice, containing an indicator such as salicylic acid or methylene blue, which, set free by pancreatic digestion, is absorbed, and can be tested for in the urine. Absorption occurs normally in four hours. If there is no absorption in five hours there is pancreatic insufficiency. Most investigators do not share Sahli's confidence in this test. Pratt, for instance, found in a normal case great delay in absorption, and in a case of carcinoma, absorption within four hours. Certainly, if there is gastric stasis for any reason, the results are vitiated.

Schmidt's Cell Nuclei Test is based on the theory that nucleases of the pancreas are responsible for the digestion of cell nuclei. He administers beef muscle cut into cubes, hardened in alcohol and wrapped in silk bags to aid identification in the feces. When recovered, the bags are mounted in paraffin, sectioned, stained, and cells are examined for nuclei, which are intact if the test is positive. Kashiwado substituted special nuclei from the thymus gland and Frenzig nucleated red blood cells of frogs or geese mixed with barium sulphate as an indicator. The method is open to the criticism that nucleases of the succus entericus and enzymes of bacterial origin endowed with nucleolytic properties are normally present in the intestine in sufficient quantities to digest nuclei. There is a second limitation in that the bags must remain in the intestine not shorter than six hours nor longer than thirty, on the one hand to allow pancreatic enzymes full action, on the other hand to avoid the harmful influence of intestinal putrefaction. Excessive or delayed activity of the intestine, therefore, will interfere with the test. So, while it has support in some quarters, most investigators place little confidence in results obtained by it.

Examination of the feces, physical and chemical, has long been a fruitful field for investigation of pancreatic functions, both from the standpoint of food digestion and food absorption, inasmuch as the pancreas not only furnishes a major digesting fluid, but also, in the light of recent researches, is known to have a most important influence upon, if not control of, the absorption of nitrogen and fat.

Azotorrhea, by which is meant an excess of nitrogen compounds in the feces, may be, then, due to a failure in the digestion of proteins or failure in the absorption of proteins. The average normal total nitrogen loss is 5-10% of the intake. If it exceeds 30%, it is the consensus of opinion that it points to pancreatic insufficiency. The test should be conducted as any metabolic study, with the patient on a fixed standard diet such as Schmidt's. One must remember that other proteolytic agents are at work, such as erepsin and

those of bacterial origin, which may influence the results; also the fact that tuberculosis and other inflammations of the intestine may interfere with the normal process of absorption.

Creatorrhea, the presence of an excessive number of muscle fibers in the feces, which normally are never more than two to a microscopic field, usually none at all, on a meat ration of 2 oz. a day, is a sign which has considerable positive significance, less negative; though, as Pratt has observed, no creatorrhea has been found in cases where pancreatic insufficiency has been excluded. Excessive peristalsis will vitiate the result as will, in Albu's experience, *achylia gastrica*.

Tryptic Power. Estimation of the tryptic power of the feces by the serum plate method of Muller and Schlect or the casein method of Gross, in spite of Gross's enthusiasm, has not been found very accurate, but has some confirmative value. Erepsin again is a disturbing factor.

Steatorrhea, the familiar fatty stool, voluminous, rancid, oozing fat globules, has long been recognized as evidence of pancreatic insufficiency. Normally there may be 20-30% fat contents, present either as neutral fat, free fatty acids, or soaps. When the fat contents exceed 30% in dried feces, pancreatic disease is probably present, providing intestinal disease, excessive peristalsis and biliary insufficiency can be excluded. Low percentage of soaps, and high percentage of split fat also point to pancreatic disturbance, yet exceptions are not uncommon. Garrod and Hurtle, for instance, have reported a case of congenital family steatorrhea, and Keuthe a case of complete atrophy of the pancreas with normal fecal fat. If excess fat content is diminished by the administration of pancreatic products, such as raw pancreas, a pancreatic lesion is probably present.

Lipase and diastase in the feces are subject normally to wide variation, and so for diagnostic purposes have served no useful end.

Lecithin. Deucher, in 1898, pointed out that lecithin was present in abnormally large amounts in cases of pancreatic lesion. A normal twenty-four hour excretion is about one-half gram. Inasmuch as the pancreatic juice only is responsible for splitting lecithin, it would seem a valuable test. Von Ehrmann, however, has pointed out that absorption of lecithin is quite enhanced by the presence of bile, so that an excessive excretion may be rather an expression of biliary insufficiency.

II. TESTS DEPENDENT UPON FUNCTION OF THE PANCREAS OTHER THAN THOSE OF EXTERNAL SECRETIONS.

That the pancreas has functions independent of its external secretions is well understood, but in what fashion it exercises these functions is not entirely clear. The results are attributed to the agency of an internal secretion, the compo-

sition of which is not known, nor its precise relation to the internal secretions of other glands.

By its internal secretions the pancreas exercises a control over the absorption of fat and nitrogen, as we have already pointed out, and also a definite control over carbohydrate metabolism, a disturbance of which is often recognized by glycosuria. But glycosuria is by no means a constant symptom of pancreatic disease. Cammidge, in a large experience, found it in 74% of his cases. On the other hand, in cases of glycosuria only 30% had evidence of pancreatic disease; so that glycosuria, and also alimentary glycosuria, as an expression of lowered sugar tolerance, are to be put in the category of tests that have confirmative value. Cammidge, in 1904, announced a reaction in the urine which he considered diagnostic of pancreatic lesion. He found a dextrine-like substance excreted in the urine, which on hydrolysis yields a pentose body (pentozazone) with definite crystalline characteristics. No test has received more attention from investigators than this. The majority feel that the reaction, even as modified in his "new iodine coefficient method," is not pancreatic in its significance, but that it is an index rather of a disturbance of carbohydrate metabolism, which may or may not be associated with diseases of the pancreas.

Diastase in the Urine. In 1908, Wolgemuth, in working out a method to test the diastatic power of the urine, found that in pancreatic lesions the amount of diastase was remarkably increased. The simplicity of the technic as modified by Geyelin makes it useful. It consists of arranging a set of test tubes, each containing a known amount of soluble 1% starch solution, to which is added the urine to be tested; each tube in the series contains one-half the amount of urine in the preceding. These are incubated for 24 hours, and tested as to the extent of digestion by deci-normal iodine solution. Corbett, Noguchi and others have confirmed Wolgemuth's work, and feel that a high diastatic content of the urine points distinctly to pancreatic lesion, and is particularly constant in acute pancreatitis and traumatic lesions. Renal disease, which tends to lower diastatic content, must be excluded. Our own experience in a series of 25 cases using Geyelin's modification was not conclusive, the highest readings being in cases of appendicitis and ovarian cyst, with no obvious pancreatic lesion, and the lowest readings being in a case of carcinoma of the head of the pancreas.

Loewi Adrenalin Test. Loewi, in 1908, found in a series of animal experiments relative to diabetes and pancreatic function, that adrenalin chloride, in a strength of 1 to 1000, when instilled in the conjunctival sac of dogs and cats, normally caused no mydriasis. In animals, however, from which the pancreas had been removed, thus setting up a complete pancreatic insufficiency, mydriasis occurred constantly, in

from 25 to 65 hours after operation. In another series of dogs in which the pancreatic juice was diverted through an external fistula, no mydriasis occurred, even after many months. From this Loewi concluded that mydriasis was the result of the failure of the internal secretion of the gland. On the basis of further experiments in dogs in which diabetes had been established, he concluded that the internal secretion had at least two independent functions,—the glyco-genic function and the adrenalin function. His argument in explanation of the phenomenon of mydriasis is that the pancreas furnishes, through its internal secretions, a chemical substance which is a depressor, or inhibitor, of the sympathetic nervous system. So, when adrenalin, which is a sympathetic excitant, is instilled in the normal eye, the sympathetic nerves supplying the ciliary muscle are stimulated, but not sufficiently strongly to overcome the pancreatic inhibition. If, by reason of disease this inhibitory control of the pancreas is vitiated or lost, adrenalin is unobstructed, or less obstructed, in its action and causes mydriasis.

Whether this hypothesis of Loewi is the true explanation of the phenomenon or not is open to question. In view of the present uncertainty regarding the antagonism of pancreas and adrenals, and, indeed, the influence of all glands of internal secretion upon one another, one perhaps should be slow to accept it. At least, however, no more rational theory than Loewi's has come to our notice. Loewi found that normally the human eye did not react to adrenalin. He tried the reaction in 48 clinical cases, embracing such conditions as carcinoma, nephritis, tuberculosis, pneumonia, rheumatic fever, and diabetes. In 36 there was a dilatation of the pupil averaging one mm. His series included 18 cases of diabetes of which 10 had mydriasis, and 3 cases of Graves' disease, all of which reacted positively. This latter result Loewi explained on the ground of a hyperactivity of the sympathetic system in hyperthyroidism, which is in excess of the pancreatic depressor influence. One writer, Cords, has since accounted for mydriasis in the presence of exophthalmos on the basis of a corneal inflammation, leading to a more rapid absorption of the drug.

Since Loewi published his paper in 1908 there have been comparatively few reports in the literature of experience with the test. It is looked upon with favor by several English clinicians, notably Garrod, Humphrey and Sladden. Zak, in Germany, found it undependable as a pancreatic guide, obtaining positive results in many cases with lesions of the stomach, intestine and peritoneum.

Sladden, however, at St. Bartholomew's Hospital, in a series of 51 tests, found 11 positive cases. Of these 11, in 5 pancreatic disease was demonstrated, in 4 it was probable, in 1 there was exophthalmic goitre, and in the last one only it was excluded at operation. On the basis

of this experience Sladden writes that the adrenalin reaction is associated with pancreatic disease, and with lesions closely associated with the pancreas either anatomically or physiologically, so frequently as to render the phenomenon worthy of serious attention as a guide in diagnosis.

Our own experience is limited to a series of 500 cases from the surgical and medical wards of the West Penn Hospital. The technic followed was that recommended by Loewi. Three drops of adrenalin chloride solution 1-1000 were instilled in one conjunctival sac, the other eye being used as control, and followed in five minutes by three more drops, the point being to fill the conjunctival sac. Aside from a slight smarting for a few seconds, the patient suffered no discomfort, and no subsequent harmful effects. Dilatation of the pupil should occur within an hour if the test is positive. The amount of enlargement varies from less than a millimeter to complete pupillary dilatation and occurs within a 15-minute period. The length of time taken for action seems to be dependent on the facility with which the adrenalin is absorbed, rather than on the amount used. Care is taken to exclude impaired or inflamed eyes.

In the 500 cases, which covered a wide range of injury and disease, there were 18 positive reactions, only 2 of which were known to have pancreatic lesion,—one, a case of carcinoma of the pancreas, the other, chronic pancreatitis associated with gallstones.

It might be of interest to note, on account of the etiological relationship which is thought to exist between gall-bladder and pancreatic disease, that in 15 gall-bladder cases there were 3 positive reactions. In only one of these was the pancreas involved.

From this record it is apparent: (1) that the reaction is not pathognomonic of pancreatic disease, (2) that it is absent in cases which by other methods are proved to have pancreatic lesions. Whether or not in 6 of the 18 cases there was an associated pancreatic lesion it is impossible to tell without a doubt. At least, judging either by clinical history, physical examination, tests of the urine and stools, or intra-abdominal examination at the time of operation, there was no definite evidence of pancreatic disturbance. On the basis of our present experience, then, we are compelled to report the adrenalin test of doubtful diagnostic value.

From this discussion it is quite evident that no tests at present are pathognomonic of pancreatic disease, or even meet the requirements of reasonable simplicity and reliability. Many are complicated chemical procedures, others are interfered with by concomitant disturbance of function in other organs. Many are merely confirmatory in value, or are of help positively but not negatively. A test is yet to be found which will point out a pancreatic lesion early and surely enough to enable the surgeon or thera-

peutist to determine with a high degree of success. It is often true that before definite evidence of pancreatic lesion is present, such as creatorrhea or steatorrhea, the gland is hopelessly damaged.

When the internal secretion of the pancreas and its metabolic functions are better understood, a more accurate and simple guide than we have at present may be forthcoming. In the meantime it behooves us as surgeons and internists to pay more attention to the pancreas in all abdominal cases, and by using the more important of these methods in our study of a case, to arrive at as accurate a knowledge as possible of the sufficiency or insufficiency of that organ.

BIBLIOGRAPHY.

- Sladden, Arthur F. S.: Critical Review: The Diagnosis of Pancreatic Disease. *Quarterly Journal of Med.*, July, 1914.
 Crohn, B. B.: Studies in Pancreatic Disease. *Arch. Int. Med.*, April, 1915, Vol. xx.
 Crohn, B. B.: The Diagnosis of the Functional Activity of the Pancreatic Gland by Means of Ferment Analyses of the Duodenal Contents and of the Stools. *Amer. Jour. Med. Sci.*, Vol. cxlv, p. 393.
 Pratt, J. H.: Functional Diagnosis of Pancreatic Disease. *Amer. Jour. Med. Sci.*, March, 1912.
 Cammidge: *Lancet*, 1904, Vol. I, p. 782; Practitioner, London, 1914, Vol. xcii, p. 621.
 Geyelin, H. R.: A Clinical Study of Amylase in Urine. *Arch. Int. Med.*, Jan. 15, 1914.
 Loewi, O.: *Archiv. f. exper. Path. und Pharm.*, 1909, Vol. lix, p. 83.
 Sladden, A. F. S.: St. Bartholomew's Hospital Reports, 1914, Vol. xlix, p. 19.

REPORT OF THE SPECIAL COMMITTEE APPOINTED BY THE CHAIRMAN OF THE MAYOR'S COMMITTEE ON THE TRAINING OF VOLUNTEER NURSES' AIDES IN NEW YORK.

Your committee to consider the question of a standardized course of training for nurses' aides, begs to submit the following:

It appears that a plan for the training of volunteer nurses' aides has already been worked out by the Red Cross Nursing Service, and that a course of instruction for that purpose has for some months been given in Base Hospitals. After carefully studying this plan in general arrangement and in detail, the committee finds that it provides a short, simple and well-thought-out course of instruction in theory and in practical work which, intelligently given, should enable those who have had it to give a good deal of useful service in hospital wards. With certain slight changes in the theory and a moderate increase in the amount of time devoted to certain practical procedures, the course appears to be a suitable one for the purpose for which it is intended.

With this plan, therefore, already in operation and seeming to promise satisfactory results, the committee is of the opinion that no good reason exists for establishing another plan and creating new machinery to carry it out.

The committee, therefore, recommends that

the plan of training for volunteer nurses' aides, now given in Base Hospitals under the auspices of the Red Cross Nursing Service, be accepted and extended to such other hospitals as may be approved by the Red Cross for the purpose, and that such courses wherever given should conform substantially to this plan and be carried on under the same auspices.

In view of the fact that hospitals, lacking proper educational facilities, and unable to offer a proper field for such training, are attempting to establish short courses of training, it is of considerable importance that such efforts should, as far as possible, be placed under the control of the Red Cross, which forms our National Nursing Service. In no other way can volunteer nurses' aides be given the official recognition which will make them available for service wherever they may be most needed.

The plan of training for volunteer nurses' aides in connection with base hospital units calls for a short course of theory covering 15 periods of 2 hours each (30 hours in all for theory), followed by a course of training in practical work in hospital wards, covering 24 periods of 3 hours each (72 hours in all for practice).

It is recommended that the courses of theory and practice be carried on in the manner described above, or concurrently, where that method proves more convenient to the hospital giving the course and that the period of practical work be increased from 72 hours to a maximum of 120 hours. This increase seems advisable, not in order that the range of work for which nurses' aides should be prepared may be enlarged, but rather that more time may be given them to acquire some reasonable degree of skill and reliability in the performance of the tasks to which they may be assigned.

The adjustment of the time in which these courses may be completed should be left to the hospital selected. It may be arranged to cover a term of two months, calling for five 3-hour periods weekly, preferably in the morning when the best opportunities are available for such training. This would mean 15 hours of practical work weekly, and the full 120 hours would require a period of two months for completion. This the committee considers the best plan. Where desired, however, it may be completed in one month, this plan calling for six hours of work daily for five days in the week. These plans outline the scheme of practical work only, and are in addition to the 15 periods of theory.

The general requirements laid down by the Red Cross for the training of Volunteer Nurses' aides are:

(a) That candidates for admission to the course should not be under 23 years of age nor over 50. (It is recommended that they bring in addition satisfactory evidence of a good English education and of good moral character).

(b) That a paid instructor be appointed for this special work, who shall preferably be an en-

rolled Red Cross nurse, selected by the Superintendent of nurses, and her appointment approved by the Red Cross Nursing Service.

(c) That the number of persons admitted to classes in theory should not exceed 20, and that for practical work not more than 10 should be admitted to any hospital at any one time for training.

(d) That the usual uniform for volunteer aides be worn during the training, but that the insignia of the Red Cross be allowed only when upon satisfactory completion of the course the aide is detailed to regular duty.

(e) That students entering for training as volunteer nurses' aides should be enrolled by the Red Cross Nursing Service and that examinations be conducted and certificates awarded through that service.

(f) That a suitable fee be charged for the course of instruction, of which 50 cents per capita be sent to the Bureau of Nursing Service at Washington.

With these general requirements and conditions your committee concurs, and recommends their adoption.

M. A. NUTTING,
Chairman,
A. N. MAXWELL,
C. E. BETH,
A. HILLIARD.

COURSE IN MILITARY DENTISTRY.—The courses which are being given under the auspices of the Government in military dentistry at Forsyth Infirmary, Boston, are being well attended. Already six hundred dentists have enrolled themselves for instruction. The one course originally planned has been expanded to three and may be still further extended, as but 180 men can be accommodated at one time. Each course lasts one week and includes lectures and demonstrations in anesthesia, asepsis, materia medica, surgical anatomy, nose and throat surgery, care of hospital in-patients, extracting, physiology and surgical bandaging. Special lectures will be given in military discipline and organization and the manual of the medical department.

In charge of the course, as instructors, is a large group of dentists. They include Drs. Freeman Allen, Timothy Leary, Frank Wheatley, Harry H. Germaine, Harold deW. Cross, director of the work; Albert Midgely, F. E. Jones, a major in the Massachusetts National Guard; William E. Chanery, Frank Lahey, Percy R. Howe, Harry B. Shuman, William A. Gobie, J. J. Hepburn, G. V. N. Sherburn and Howard Smith.

When the dentists finish the course at the end of a week they will be expected to take an examination under the charge of the surgeon-general, and a physical examination. If they pass both they will be declared available for army service, and will be called out as fast as the Government needs them.

SOME UNUSUAL CONDITIONS OBSERVED IN 245 POST-MORTEM EXAMINATIONS AT DANVERS STATE HOSPITAL.*

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IN a service of more than two and one half years at this hospital, embracing 245 post-mortem examinations, a great variety of interesting and unusual conditions have been encountered. A number of the more interesting of these, which are not of sufficient importance to warrant separate notes, but are nevertheless striking enough to merit a place in the literature, have been brought together in this paper. For the most part, they are presented merely as facts of observation. Some of the conditions are perhaps not so unusual in other laboratories as in this. Nevertheless, the number and variety of the conditions here reported may serve as an indication of the remarkable medical and pathological material an institution such as this holds.

A great many other cases which might be included in such a series as this have been or will be reported either singly or in groups.

HEAD AND CORD.

Hemorrhage. In one case of paresis (1789), age 38, there were hemorrhages into the dura of the head, beneath the dura throughout the extent of the cord, and beneath the arachnoid over the lower third of the cord. Death was sudden.

A non-paretic case (1860) showed clotted and fluid blood beneath the dura over the left hemisphere, most marked in the frontal region, with narrowing and lengthening of the hemisphere. There was also cortical hemorrhage in the left occipital region. Probable cause, head trauma.

Two cases of paresis (1894 and 1933) showed subarachnoid hemorrhages. The first died suddenly, when seemingly in good condition, and the hemorrhages involved the arachnoid around both Sylvian fissures. The second had been very violent. The hemorrhage was limited to the arachnoid of the cerebellar notch.

Most unusual were the widespread subarachnoid hemorrhages in a non-syphilitic imbecile (1923), age 37, involving the base of the brain, the Sylvian fissures and the cord. Death was sudden, and the engorgement of the neck veins, with marked cyanosis of the face, had led us to expect some thoracic condition.

Hemorrhages into the substance of the brain, in the sense of an apoplectic stroke or shock, were relatively common, especially in the group of cases with well marked arteriosclerosis. How-

ever, hemorrhage into the meninges or between the meninges is an extremely uncommon finding. We have here five cases in which it was found. Three of these cases were paretic, in which there are, of course, lesions in the vessels which might cause this. In the fourth case, in which there had been trauma, the cause also seems clear. In the fifth case where the hemorrhages occurred in a non-syphilitic imbecile who was in excellent physical condition, the cause remains absolutely obscure. It may be noted that hemorrhage in paresis is a rare thing despite the lesion of the vessels.

Tumors. In a case of senile dementia (1780) was found a fibroma of the 8th nerve "about the size of a hazelnut." Hearing was "a little dulled."

A case of organic brain disease (1849) showed at autopsy a dural endothelioma, occupying the right cerebello-pontine angle, 5x5x2 cm. This was closely adherent to the pons and to the dura on the posterior surface of the petrous portion of the temporal bone. The pons and medulla were remarkably pressed out of shape, but stained sections show no degenerations in any fiber tracts. The tumor is an endothelioma.

This case had shown before death an internal strabismus and had much exaggerated knee jerks. Owing to the patient's marked confusion only an objective examination could be made, from which it was concluded that she had an organic brain disease with the possibility of a brain tumor.

In the whole series of 245 cases, 4 cases (including both of these) of brain tumor were found. In other words, brain tumors are uncommon among the insane.

As I have pointed out elsewhere, there have been a total of 28 brain tumors in the entire series of 1985 of Danvers' autopsies. This is perhaps a somewhat smaller percentage than is commonly found, but the fact remains that in not more than 5 per cent. of the insane are there brain tumors to account for their disorder.

A case of paresis (1896) of 5 years' duration showed a large mass covering the entire right frontal lobe, approximately 10x8x2.5 cm. with central cavity. This was closely adherent to the dura, and represents the classical extreme stage of internal hemorrhagic pachymeningitis. This condition in any of its grades has been uncommon in this series, although the minor stages have been encountered. This is, however, the only marked case.

Meningitis. Two cases of acute purulent leptomeningitis were encountered.

The first (1857) occurred in a man who had shot himself through the head five weeks previously, cutting the right optic nerve and just missing the left. The sella turcica was uninjured. The right eye had been enucleated. The orbital portions of the frontal lobe were necrotic and the dura was adherent. There was a purulent meningitis involving chiefly the base of the brain.

The second case (1972) represents an error due to the infantile paralysis scare of the past summer.

* Contribution No. 63, Danvers State Hospital Papers.

The man's illness was thought to be poliomyelitis at first, but was later diagnosed meningitis. He was sent here as insane. The total duration was about 8 weeks. The autopsy showed a pronounced meningitis at the base. A short chain streptococcus was demonstrated, together with a pronounced polynucleocytosis. There was a double purulent otitis media and frontal and ethmoid sinus infection.

Aneurysm. An arteriosclerotic case (1980) showed, in addition to various softenings, a small aneurysm, 1.5 cm. in diameter, of the middle cerebral artery in the depths of the Sylvian fissure.

Arteriosclerosis of the cerebral vessels is a rather common finding. It is found on the whole in two groups of cases: in those whose psychosis comes on in advanced life where the arteriosclerosis may or may not be the etiological factor in the psychosis; and in a second group representing those whose psychosis comes on in earlier life but who live to an advanced age. Some idea of the probable amount of sclerosis may be gathered by the statement that about 60% of our autopsies are done on people over 50 at the time of death. This is the only case in which we found any aneurysm in the cerebral vessels.

BONES.

One case (1893), an old imbecile, showed osteitis deformans. The skull had several unusually marked prominences on it. In removing the calvarium, the outer table was several times broken through merely by pressure of the fingers. Its consistence was that of rotten wood, and its thickness varied from 1.5 to 2.5 cm. It was extremely cancellous.

The occurrence of persistent metopic suture in four cases may also be noted.

CARDIO-VASCULAR.

One case (1818), with a heart weighing 745 g., showed, at the apex of the left ventricle, an area of very marked thinning of the muscle, from 2.5 cm. elsewhere to .5 cm. Here there was a large grayish softened mass, which was easily removed. This was a very large thrombus (there was marked arteriosclerosis, fibrous myocarditis and chronic interstitial nephritis).

In two cases (1822 and 1842) there was thrombosis of the pulmonary artery; in the former, of several small branches; in the latter, of one large branch.

One case (1823) showed at 56 a thrombosis of the descending branch of the left coronary artery to account for the sudden death.

Autopsy No. 1981 is especially striking. This woman, age 52, had complained of pain in her legs for 3 weeks before death. About one week prior to death, the ends of the toes began to dry up, so they became hard, with a translucent yellowish-red appearance. For some days there was a marked purple color of the left leg, with swelling and induration, and a less marked condition in the right leg. At autopsy there was found a white thrombus filling the ab-

dominal aorta from about 5 mm. below the origin of the renal arteries, and extending into both iliacs and femorals. In the femoral arteries it became red. It extended beyond the point to which the arteries were traced down the legs, *i.e.*, about half way to the knee. There was only moderate arteriosclerosis, but very marked anemia.

Autopsy No. 1982 is no less striking. This woman had passed a good night. In the morning she suddenly became ill, and died in a very short time, gasping for breath, the pulse small and weak. The autopsy showed a recent large hemorrhage into both adrenal capsules. Each adrenal weighed from 55 to 60 grams. There was moderate sclerosis of the aorta.

LUNGS.

A number of cases of pulmonary edema of obscure etiology were encountered. Probably the most striking lung condition found was in the following case (1788):

This woman, a case of dementia praecox had partaken freely of oranges and grapes the day previous. Later she became very restless, and vomited a few minutes before death. At the autopsy, there were large, undigested masses of orange fiber and half and whole grapes in the stomach. Similar material was found in the oesophagus, mouth, larynx, and plugging the left bronchus and partly occluding the right. Small pieces were found in smaller bronchi.

Two other cases in the series showed an acute lung condition due to aspiration of regurgitated stomach contents. In view of the large number of cases which require tube feeding, and the not inconsiderable number of cases who regurgitate their food to a considerable extent, the number of cases of asphyxiation or pneumonia due to aspiration is remarkably small.

INTESTINES.

Two cases (1837 and 1797) showed ulcers and multiple perforations of the caecum, with resulting peritonitis. One of these cases was operated on, because of symptoms of appendicitis, about three days before death. In this case, the lesions were definitely tubercular.

One case (1748) showed a strangulated femoral hernia. One side of the ileum had herniated and become pinched off. There was a typical picture of acute intestinal obstruction.

A very remarkable case was 1766. A very obese woman showed an enormous lobulated umbilical hernia, measuring 25 cm. across and protruding 20 cm. from the body wall. In this were the lower end of the stomach; all of the small intestines; the large intestine, excepting only the caecum and the lower end of the descending colon; the apex of the very large bladder; an adhesive band from the liver. This case also showed a large fibroid with a calcified shell, and calcified strands running from the center. The enormous hernia was strangulated.

Duodenal ulcer occurred five times (1771, 1916, 1926, 1927 and 1929). Three of these cases showed two ulcers. In four there had been

perforation, and in two both ulcers had perforated. One case (1771) is regarded, from the history and the histological examination, as a case of typhoid fever. The unusual location of the ulcers is very interesting.

Autopsy No. 1878, on a male paretic, showed a very soft, necrotic oesophagus and neighboring portion of the stomach. There had been a perforation in this region, and as a result the parietal pleura and visceral pleura over the entire posterior surface of the left lung had been digested away. The ribs were bared. Air could be forced out through the opened alveoli.

In case 1879 the caecum lay just to the left of the midline, with the appendix running off to the left. The ascending colon ran in the midline. The transverse colon was very short, running from the midline upward and to the left to the splenic flexure. The small intestines were all to the right of the ascending colon. This case represents an incomplete fetal rotation of the intestines.

In 1921 there was volvulus. The sigmoid was twice twisted on itself, forming a very complete intestinal obstruction.

In two cases small "pebbles," about the size of beans, were found free in the peritoneal cavity. These were calcified and may represent necrotic and calcified appendiceal epiploica.

GALL-BLADDER.

Gall-stones and chronic cholecystitis were very common in the series. One case (1978) deserves especial mention. Here there was a gall-bladder measuring 7x4.5x5 cm. The walls were thick and white, the anterior being 2 cm. in thickness. There was much calcification in the wall. The cavity measured 4.5x2.5x3 cm, and was packed with stones.

LIVER.

Cases of frank cirrhosis were very rare, despite the pronounced alcoholism of many cases. Two cases (1807 and 1910) showed scars on the upper surface of the liver. In one case there was syphilis, in the other it was suspected, but the Wassermann was doubtful. (This case—1910—also presented a condition which is unique in the experience of this hospital. Thus we have many cases of syphilis of the nervous system, and a number of cases of syphilis without involvement of the nervous system, but this is the only case in which we have found necrosis of the nasal septum and soft palate. The nose had the typical "saddle shape." The psychosis in this case was *not* due to neuro-syphilis.)

TUBERCULOSIS.

This has occurred to a marked degree in about 5% of the series, which is rather less than in former times. Two cases were very striking.

In the first (1833) a woman of 86 had what was regarded as a bronchopneumonia. There was atrophy of the liver. The mesenteric and retroperitoneal lymph nodes were much enlarged, firm and white,

leading to the supposition that there was a tumor which, however, was not found. Microscopically, there was a very remarkable miliary tuberculosis of lungs, liver and lymph nodes. In the liver the areas are very minute. In view of the age of the patient, this was absolutely unexpected.

In the second (1871) the man (54 years of age) had been feeling badly for about 10 days, but made no special complaint. There was pronounced tuberculosis of the lungs; of the peritoneum; miliary tubercles in spleen and liver; and an extremely marked tubercular process in kidneys, ureters and bladder. One kidney was merely a shell around a large mass of caseous material. Both ureters were greatly enlarged, with much thickened, very hard walls.

Considering the length of time the tubercular process must have been active, the absence of symptoms in this case, the man being up and working each day, is truly remarkable.

URETERS.

Pyelitis has been rather uncommon, as contrasted with its frequency in earlier years.

One case (1915) showed complete bilateral doubling of the ureter. That is, there was a double pelvis in each kidney; a double ureter on each side, and four independent openings into the bladder.

Such cases are rare, as judged by their infrequent appearance in the literature. They have been very infrequent here. There is one other case (1279) among 1985 autopsies in which there were two complete ureters on each side, with five openings into the bladder. One of the right ureters was drained by two openings.

One other case, showing double ureter on one side, with union before reaching the bladder, has occurred in this series.

TUMORS.

It has been stated above that tumors of the brain are relatively uncommon in the insane. This is no less true of the body organs in general; thus, carcinomata occurred in only very few cases and there has been no case of sarcoma. In one case (1824) there was carcinoma of the pyloric end of the stomach. One case of carcinoma of the prostate (1810) occurred. In one case (1883) there was a carcinoma of the epithelium covering the hard palate with metastases. There was one dermoid cyst; and two cases showed calcification of fibroids.

In 1817 there was a small primary carcinoma of the thyroid, with metastases to the liver and lungs. Case 1939 also showed carcinomatous areas in all the body organs.

The most interesting case was 1831, a woman of 34. There was a walnut sized carcinoma of the body of the pancreas, and a slightly larger hemangioma of the liver, neither of which was instrumental in causing death. The relative youth of the patient, the unusual situation of the carcinoma and the com-

bination of carcinoma of the pancreas and hemangioma of the liver in this case are all very interesting. If, indeed, tumors be due to fetal rests, one might think that there would also be in this case fetal rests or arrests in other loci, particularly the nervous system (to account for the psychosis). However, there was in this case no indication of tumor of the brain, and the brain, on the whole, was a rather normal looking one.

GENERAL.

One case (1891) is of considerable interest. This man, age 56, entered the hospital in a delirium which was ascribed to a cardiorenal condition because of the ascites and general edema. The autopsy revealed a generalized infection with the gas bacillus (nervous system not affected). The solid organs, such as the liver and heart, would float in water. The liver had the appearance of a rubber bath sponge. There was a large recently healed scar of varicose ulcer.

It is obvious that no attempt has been made to discuss the pathological findings in mental diseases. In further reports upon this series of autopsies by groups this will be done. We have not presented here the cases which were unusually striking from a psychiatric point of view. The attempt has simply been made to point out some of the more unusual physical conditions that have been found.



SOME CONDITIONS LEADING TO INCORRECT DIAGNOSIS OF ADENOIDS IN CHILDREN.*

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THE term adenoid, or adenoids, is used generally as descriptive of a mass of lymphoid tissue in the rhinopharynx producing abnormal symptoms. We say a child has or has not adenoids, though manifestly he must have some lymphoid tissue in the epipharynx; so the term is one of disease. Luschka and Waldeyer pointed out that this mass of tissue should be regarded as a tonsil ("Luschka's tonsil"), and the latter showed that there is normally a ring (really diamond-shaped) of lymphoid or tonsillar tissue, protecting the upper respiratory tract from infection. This "Waldeyer's ring" is made up of the pharyngeal tonsil above, in the rhinopharynx, the lingual tonsil below, between the base of the tongue and the lingual surface of the epiglottis, and the faucial tonsils, one at either side of the pharynx, between the pillars of the fauces. It may be well to emphasize, in passing,

that they regarded these structures as protective, though they are seldom so treated in these days. In common with other glandular structures elsewhere in the body, these groups of lymphoid tissue are peculiarly active physiologically in the years from birth to the 15th or 16th year. During this period, in response to physiologic calls, they are frequently congested and engorged, but generally return to normal soon after; and ultimately, by the time puberty is attained, they have atrophied to negligible masses. Such is the life cycle of these structures in health, and I go into it at this length as I wish to establish the reasonable belief that the presence of lymphoid tissue in the epipharynx, even congested, may be perfectly normal, and when so found by the exploring finger, or seen by the mirror, is not necessarily to be removed as causative of an abnormal condition, the origin of which the attendant cannot otherwise account for.

The widely prevalent belief among some of the profession and many of the laity that difficulty in nasal respiration in children is pathognomonic of adenoids has led to many unnecessary operations and unsatisfactory functional results. My opinion is the gradual growth of an experience covering observation of hundreds of cases in the hospitals and my own office, where I have seen children arrive with the diagnosis already made, either by the parent or by the doctor referring the case. Thus, I have come to adopt the routine of asking: "What makes you think an adenoid causes this difficulty?" And the reply is almost as routine as the question: "Because he sleeps with his mouth open, breathes through his mouth often, takes cold easily, sneezes so often, is restless at night"; or "the doctor says he has an adenoid."

The presence of an adenoid can be more reliably determined by an examination, not of the nose or throat, but of the ear drum, though inspection of the former regions will, of course, frequently reveal its presence. This is my own belief, an opinion I have not seen stated by anyone else, and is based on my firm feeling that no mass of lymphoid tissue in the epipharynx of a child can be so large, or so placed when small, as to require removal and not cause in the light reflex and position or color of the drum head an easily recognizable change when under inspection at the hands of a skilled aurist. On the other hand, frequent colds, mouth breathing, restless sleep, free nasal mucous discharge, though classical symptoms, are not sufficient grounds for a diagnosis of adenoids. It is true they are highly suggestive and frequently the result of adenoids, yet I have seen one child, with only the normal amount of lymphoid tissue in the rhinopharynx, show all these signs in the most distressing degree, and recover completely when he was denied soda crackers to which he had had access for several weeks. As often as he surreptitiously partook of this usual-

* Read before the Medical Society of the District of Columbia, Washington, D. C., March 21, 1917.

ly simple diet, all the symptoms would return. This is an example of perhaps the most frequent cause of false adenoid symptoms, and is due to a nasal reflex from gastro-intestinal irritation, of which I have seen a fairly large number in consultation, though in few was the cause so simple and the relief so prompt.

It may be contended that all this uncertainty could be readily removed by a digital examination, and I admit that this impression is as general as it is misleading, for many reasons. Bearing always in mind that the mouth and rhinopharynx of children are very constricted, that the examination is painful if not actually brutal, even where the child is submissive, and that the fingers of many are too short to reach easily the part to be palpated, it is not hard to believe that such an examination might be inconclusive. Add to these natural difficulties, the further complication of struggling, and most do struggle valiantly, this method of examination is no longer the simple, efficient diagnostic measure commonly recommended. Thus, I believe that under the peculiar difficulties surrounding such an examination, which must be brief and even fleeting, the finger cannot give definite information as to the location or size of the mass, and these two points are the prerequisites for a proper diagnosis. It is not sufficient to say that the examining finger detects a lymphoid mass, as that fact was known before examination, which should determine the location of the mass and its size, as these two details constitute all the difference between necessity for operation, and necessity for non-operative treatment for the symptoms. Moreover, I have seen at least one case infected by the nail of the examining finger, and this one illustrates both of the points I have tried to make clear,—its fallibility on the one hand, and its reliability on the other, of the ear examination. Basing his conclusions on the digital examination, a laryngologist of great experience and very deft fingers made the definite report of no adenoids; as he infected the patient in the process, it is to be assumed that he was thorough in his manipulation. I reported that an obstructive adenoid existed, basing my belief on a retracted drum on each side. One month later a large adenoid was removed. I have abandoned the digital method since the first two years of special practice, and have not made such an examination for ten years at least. However, under an anesthetic this method is of great value, and is the only way we have of determining the extent of the mass to be removed. When the palate is retracted we can make a leisurely inspection with the finger which will reveal everything that we need to know, size, location and structure.

An unusual condition that led me twice to a faulty diagnosis was an extension of the vomer back to the pharyngeal wall to which it was firmly adherent. It was covered with a degen-

erated, polypoid membrane that gave a perfect picture of an adenoid in the mirror, but the instant I examined it with my finger under an anesthetic, preliminary to removal, its nature became apparent. A diagnosis by inference is perfectly reliable, as any process that will cause enlarged and diseased faucial tonsils will similarly and simultaneously cause disease in the pharyngeal member of this lymphoid family, and no examination is necessary.

While such an error seems elemental, yet often a child is said to be in need of an adenoidectomy, whereas the adenoid is merely temporarily engorged from a recent cold, and subsides soon after. The effects of a coryza in causing a hypertrophy of the pharyngeal tonsil persist much longer than the nasal condition, easily two weeks, and at times in the poorly nourished, a month after cessation of the nasal engorgement and inflammation. This is the reason that repeated attacks of adenoid inflammation lead to permanent hypertrophy, as there is little time between the actual engorgement of the adenoid before another acute attack follows. Thus the practically chronic inflammation of the tissue leads, as it does elsewhere, to a fibrous condition, and the necessity for operation. Failure to take into account this temporary enlargement is a very frequent cause of faulty diagnosis, and was the immediate cause of error in a case recently seen by me. Not only did the adenoid hypertrophy disappear, but even the faucial tonsils resumed the normal; nevertheless, the boy continued to breathe with difficulty during the day through his nose, and at night not at all through it. This led the original examiner to insist all the more on his previous diagnosis, but, later, when asked to examine the child, I found that the nares were completely blocked with the characteristic crusts and thick tenacious mucus of atrophic rhinitis. Systematic removal of these masses and appropriate treatment have cleared up all his respiratory condition.

The blocking of the nares by growths such as polypi and fibromata, especially when they present in the rhinopharynx, is one of the less frequent causes of mistaken diagnosis, though I have seen three such cases where the latter were at the bottom of the trouble. One of these cases had already been operated upon, naturally without relief, and another I saw for the first time on the operating table, where I was asked to operate at the conclusion of another operation on this patient. On lifting the soft palate a hard, glistening, elongated tumor was seen, a fibrosarcoma in all likelihood. This was the mass that had been diagnosed as an adenoid, especially as there was also difficulty in nasal respiration!

Failure to force children to evacuate their bladders at bedtime, or allowing them to drink much fluid at the evening meal, resulting in the same distention of the bladder, occasionally leads to intumescence of the turbinates, par-

oxysmal sneezing, mouth breathing and restless sleep. A reflex in the nose similar to that seen in those cases exhibiting the connection of the sexual apparatus with the nose is the cause here. Chronic constipation acts in the same way, but also creates its effects through the channel of disturbed metabolism dependent on the auto-intoxication.

Perhaps the most interesting cases, where we think erroneously that an adenoid is causative of the respiratory distress, are those with an anaphylactic affection, chiefly for eggs and milk, resembling the class I have referred to as due to gastrointestinal irritation, though etiologically quite different. I have seen many times children exhibit all the symptoms we regard as classical of adenoid obstruction (except the adenoid itself) after eating eggs in some form, and to a less degree, milk also.

In all these cases, whatever the cause, the nasal obstruction and the paroxysmal sneezing are due to the intumescence of the turbinates which may reach an enormous distention in a few moments, only to subside in 15 or 20 minutes, to recur about two or three hours later. There is so much less discharge of mucus than in coryza, and the struggle for nasal breathing is so fierce that it is striking how soon the child returns to quiet, peaceful sleep, pending the next exacerbation. This picture is typical, and almost constitutes, in the points enumerated, a means of differential diagnosis; nor is this characterization fanciful. I have studied one case for two years, during which time he has had many colds, and I have had ample opportunity to compare the two types of respiratory distress in his case, as well as in numerous others. Children who have had acidosis seem peculiarly liable to this trouble, and the diagnosis is here especially important, for obvious reasons.

I have come to the conclusion that an experienced pediatrician should be fully as capable of making a diagnosis of adenoids as any laryngologist, and certainly each can be of great service to the other in determining the cause of the respiratory disturbances to which children seem especially liable in the temperate zone. Moreover, in view of the prominent part played by metabolism in the causation of false adenoid symptoms, and the importance of proper diet in childhood, cooperation is again most desirable.

In conclusion, I would like to summarize the important points in connection with the foregoing remarks: Full bladder at night, chronic constipation, anaphylaxis, gastrointestinal irritation, nasal growths, blind reliance on digital examination and posterior rhinoscopy (whether with mirror or nasopharyngoscope), reliability and delicacy of the test of drum inspection and the wisdom of examining when all inflammatory conditions have definitely disappeared.

A NOTE ON BÁRÁNY'S SIGN IN EPILEPTICS AND IN SCHOOL CHILDREN.

By EDWARD A. TRACY, M.D., BOSTON.

BÁRÁNY's sign is conjugate deviation of the eyes, when closed, to the right or to the left. It indicates supranuclear increase of tonus. In 50% of hemiplegics there was found conjugate deviation of the eyes toward the paralyzed side, *i. e.*, away from the side of the brain lesion. In cases of fresh hemiplegia, there was conjugate deviation toward the side of the brain lesion. In one-third of the cases of epilepsy examined, conjugate deviation of the eyes was found present, and the eyes looked toward the side of the brain lesion, when one was present.*

Through courtesies extended by Professor Southard of the Harvard Medical School, and Drs. Flood, Thom and Hodskins, the writer examined fifty patients at the Monson State Hospital for epileptics. BÁRÁNY's sign, conjugate deviation of the eyes, was found present in 23 of these cases, the conjugation pointing to the left in 13 of them and to the right in 10.

In a case of epilepsy treated by the writer, in which observations were made for a period of several months, the condition of conjugate deviation of the eyes to the left—noted at various times during two months—changed to the normal condition of divergence and remained so up to the time of writing—a period of two months. During this latter period observations were made twice daily. In this particular case the writer has findings that indicate lesions on each side of the cerebrum—the more extensive lesion being in the left cerebrum. BÁRÁNY's sign, when present, pointed toward the left side.

In two patients at the Monson State Hospital who were examined at intervals of six months: in one the condition of conjugate deviation to the left, noted at the first examination, changed to the condition of divergence (regarded by BÁRÁNY as a normal condition), and in the other patient the condition, noted at the first examination, of convergence (regarded also as normal by BÁRÁNY) changed to the condition of conjugate deviation to the left.

These observations prove that BÁRÁNY's sign, when found in epilepsy, is not constant.

In the ordinary course of practice, the writer found several individuals, apparently normal, with conjugate deviation of the eyes. To determine the frequency of such cases, 478 school children between the ages of eight and fourteen years, were examined. In 191 of these children, conjugate deviation of the eyes was observed.

CONCLUSIONS.

BÁRÁNY's sign, conjugate deviation of the eyes, is frequently present in epilepsy. It is not constant in epilepsy, when found. It is not rare in apparently normal children.

* Transcribed from personal notes taken during course of instruction given by BÁRÁNY, in Vienna, in 1914.

Book Reviews.

Pye's Surgical Handicraft. A Manual of Surgical Manipulations, Minor Surgery, and Other Matters Connected with the Work of House Surgeons and Surgical Dressers. Edited and largely rewritten by W. H. CLAYTON-GREENE, B.A., M.B., B.C. (Camb.), F.R.C.S. (Eng.); Surgeon to St. Mary's Hospital; Lecturer on Surgery in the Medical School, etc. Seventh edition. Fully revised, with some additional matter and illustrations. *Vel de minimis curat chirurgicus.* New York: William Wood and Company. 1916.

The seventh edition of the well-known English book, *Pye's Surgical Handicraft*, is a volume of medium size, about 600 pages, and very well illustrated with some 350 cuts and plates. In the preface, Mr. W. H. Clayton-Greene says: "The seventh edition of this work carries out the features of its predecessors. Most of the chapters have been revised, and some have been rewritten." Glancing through the volume, we notice less than a page upon the very important subject of local anesthesia, an amount of space unquestionably insufficient and out of proportion in a volume of 600 pages. Much of the apparatus pictured is a little strange to American eyes, but will probably be more familiar to us in the future as a result of the present war; even though many of the appliances appear somewhat old fashioned, it will be beneficial to the American surgeon in helping him to remember that so-called modern innovations are not necessarily either new, or improvements upon methods already subjected to the severe test of actual use. The type, paper and binding of the book are good.

A Laboratory Guide in Pharmacology. By TORALD SOLLMANN, M.D., Professor of Pharmacology and Materia Medica, Western Reserve University, Cleveland, Ohio. Octavo, 355 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1917. Cloth, \$2.50 net.

This work is clearly written by an authority in this line of medical knowledge. It is made up of two parts, one of which pertains more distinctly to pure pharmacology, associated with toxicology, while the second comprises, more particularly, applied therapeutics, as derived from experiments on animals.

The second division appeals, particularly, to medical men on account of the intimate knowledge which it imparts of the action of drugs upon the various organs of the body. This,

hitherto, has been taught largely by demonstration and didactic lectures on the part of instructors. But one can appreciate the vastly greater knowledge which the student acquires, either alone or in groups, in the actual performance of these experiments upon animals.

A wise provision has been made by the author in dividing these experiments into required and optional ones, whereby the more essential and important are necessarily performed, while others may be omitted, if time limits.

The exactness with which laboratory material, apparatus and distribution of groups of students in the performance of these experiments is described, can be heartily commended.

On the whole, the work is somewhat ahead of what the majority of medical schools can at present carry out, but to which they must all aspire.

A Manual of Otology for Students and Practitioners. BY CHARLES EDWIN PERKINS, M.D., F.A.C.S., Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital; Assistant, Aural Surgeon, New York Eye and Ear Infirmary; Fellow of the American Otological Society, etc. Illustrated with 120 engravings. Philadelphia and New York: Lea & Febiger. 1916.

Perkins' Manual of Otology is a handy volume of 445 pages. There are 120 illustrations. The book is well and attractively printed, and the paper is exceptionally good. The aim of the writer, who has had a large teaching experience, is to enable the undergraduate and the post graduate, who is to make otology a specialty, a capable aurist. He says, "Careful adherence to the technic advised, with due attention to the measures indicated to avoid dangers and accidents, will insure the surgeon becoming a safe and efficient operator." This is making large promises. Further on in the preface the writer states, "The Chapter on Suppurative Diseases of the Labyrinth sets forth the present knowledge of the graver affections of this complex region. It is hoped that this part of the subject has been presented in so clear and definite a manner as even to bring it within the easy grasp of the beginner." Omit the word "easy" and this somewhat self-satisfied statement is true. The chapters on the labyrinth are among the most direct and the best in the book.

The book is concise, and unusually fresh and snappy. It is also pleasant reading, which cannot be said of all hand-books.

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MASSACHUSETTS MEDICAL SOCIETY.

THE one hundred and thirty-sixth anniversary meeting of The Massachusetts Medical Society was duly observed on Tuesday and Wednesday of last week, June 12 and 13. The hospital clinics, the meetings of the several sections, and the annual meeting were successfully held in accordance with the program announced in the issue of the JOURNAL for June 7, and were attended by over seven hundred members. All the papers scheduled were presented, though some of the authors and discussers were absent on military service. At all the meetings references to the war and to the circumstances created by it in this country gave a characteristic tone to the proceedings.

Particular attention is directed to the text of the Shattuck Lecture by Dr. Walter B. Cannon, published in full as a leading article in the present issue of the JOURNAL. Dr. Cannon's work, a scholarly contribution, represents his amplification of the research initiated and the suggestions made by Dr. William T. Porter as a result of his experiences at the European battle front in 1916. Dr. Porter's original papers

and valuable conclusions on the important subject of shock have been published in the JOURNAL during the past winter.

At the annual meeting on June 13, the following officers were elected for the ensuing year:

Dr. Samuel B. Woodward, Worcester, president; Dr. George P. Twitchell, Greenfield, vice-president; Dr. Walter L. Burrage, Boston, secretary; Dr. Arthur K. Stone, Boston, treasurer; Dr. Edwin H. Brigham, Brookline, librarian; Dr. Myles Standish, Boston, orator.

The annual dinner was held at the Copley Plaza Hotel on the evening of Wednesday, June 13, and was attended by over four hundred members. Among the after-dinner speakers were Lieut.-Gov. Coolidge, Major F. F. Simpson, Major Horace D. Arnold and Dr. Allan J. McLaughlin, Massachusetts State Commissioner of Health. Dwelling chiefly upon the medical situation in the war, Dr. McLaughlin emphasized on the one hand the urgent need of surgeons in the Medical Reserve Corps, and on the other, the desirability that medical students should pursue their professional studies in order to fit themselves as speedily as possible for the care of the civilian population, thereby relieving older men for service in the field. Bishop Lawrence discussed the menace of alcohol and of venereal disease both to soldiers and to the community at large, and urged united effort on the part of physicians to prevent and control both evils. President Lowell of Harvard, the closing speaker, explained the purposes of the League to Enforce Peace, and urged that we be not found unprepared for peace as we were for war.

"It is a mistake to consider that we have entered this war to force our ideas of democracy on Germany or any other nation that does not like them. We are at war because we will not allow Germany to force her ideas of government upon us and upon the rest of the civilized world. If she likes her form of government and will hold her scepter in peace, there is no desire or inclination in the United States to interfere."

Dr. Samuel B. Woodward, presiding at the annual meeting and at the dinner, spoke and introduced other speakers with his customary ease of manner and happiness of expression. The serious atmosphere which pervaded this first war session of The Massachusetts Medical Society, it may be hoped, has impressed all physicians with the seriousness of our national situation and with the duty of physicians in

meeting their important share of its emergencies and responsibilities. The circumstances and changes that may develop before another year elapses cannot be foreseen, but that the Massachusetts profession at its meeting in 1918 can look back with honest credit upon its share of service may be confidently predicted.

THE RÔLE OF THE INTERNAL SECRETIONS IN THE FEMALE FUNCTIONS.

IN the light of modern investigations the part that the internal secretions are playing in all the body functions is assuming greater proportions every day. Not only are they in entire control of many physiologic functions, but they control them by a system of antagonistic actions. Their activities are tonic or trophic to a large degree, and directly influenced by the vegetative nervous system. Disease or disturbances in function of one of the glands may throw the whole endocrinous system out of harmony, and are manifested clinically by pathological symptoms in the parts controlled. The harmonious balance may, however, be restored, even without the restoration in the gland affected, by a sort of compensatory activity or inhibition in the other glands of the system. Certain physiologic functions are the especial charges of certain of the endocrinous glands or of certain systems of glands, but there is an inter-relation between the whole series of endocrinous glands throughout the body.

The glands which are intimately associated with the development and with the tonic or trophic integrity of the female genital system are the ovary, the thyroid gland and the hypophysis. Besides producing the ovum, the ovary exerts the main trophic influence upon the genital organs. It influences the shape of the pelvis, the development of the mammary glands, and the character of the voice. Its influence is particularly evidenced in respect to the menstrual epoch. The internal secretion of the ovary thrown into the general circulation acts specifically on such mucous membranes of the body as those of the nose and pharynx, but especially upon the membrane lining the uterus. There is a hyperaemic condition through the entire body, and vicarious menstruation is not an abnormal condition at all, but rather a manifestation unusual in degree. It is the relief of the congested capillaries of the uterus by the bleeding that constitutes menstruation, as ordinarily conceived.

The association of the thyroid gland with the sexual apparatus is well known. It is intimately associated with the vegetative nervous system, and is no doubt concerned in the various nervous manifestations during menstruation and in disturbances of menstruation. At any rate, thyroid disturbances are about ten times as common in the female as in the male.

The hypophysis is probably the most important factor in the nutrition and in the maintenance of tone in the sexual apparatus. Disturbances in this organ are very ready to act adversely upon the ovarian function, with respect especially to the latter's trophic activities. The posterior lobe of this organ secretes a substance known as pituitrin and has a specific function in the production of term labor. The extract is used medicinally to accelerate labor at term, when, for some reason, the action is inhibited. Moreover, disturbances in hypophyseal action, especially as regards the posterior lobe, may inhibit the breaking through the Graafian follicle of the ovum. In this ovulation cycle the ovary maintains the activity of the tubal cilia in their function of driving the ovum into the uterus. The thyroid contribution to this function lies probably in the stimulation afforded these cilia in their activity.

Menstruation occurs in the female because the ovarian secretion provokes this general and uterine congestion in which bleeding follows the climax in the most affected of the membranes, that of the uterus. In association with this period the ovum is thrown off from the Graafian follicle. If no fecundation takes place only a scar is left in the place of the follicle. If fecundation does take place the follicle gives rise to the formation of a new body or organ, the corpus luteum or yellow body. The impregnated ovum gives off a secretion which tends to antagonize and to nullify the ovarian secretion purposed to produce the menstrual congestion. The corpus luteum itself becomes an organ of internal secretion, assuming a part in the trophic control of the functions concerned. During pregnancy there is effected a structural change in the anterior lobe of the hypophysis and an inhibition in the action of the posterior lobe. At term, as a result of the activity of the various internal secretory organs, there is a break in the balance heretofore maintained between the hypophysis, the ovary and the placental tissue, as well as the corpus luteum, which acted to inhibit menstruation. Labor,

then, really becomes a restored menstruation, and is brought about particularly by the restored reactivity of the posterior lobe of the hypophysis. Up to this time the inhibition on this gland is so strong that the injection of even large amounts of pituitrin extract will have no effect to bring on labor, while at labor even minute amounts of pituitrin have a remarkably specific action. Pituitrin not only has a direct action on the uterus, but it acts to stimulate the gland itself.

MEDICAL REMINISCENCES OF WATERLOO.

IN an issue of the *Edinburgh Medical Journal*, quoted in a recent number of the *British Medical Journal*, were published extracts from a report of observations made in the British Military Hospital in Belgium after the battle of Waterloo, by John Thomson, the first professor of military surgery at Edinburgh University. Dr. Thomson went with Dr. Somerville to Belgium, where he arrived about three weeks after Waterloo, on July 8, 1815. He visited the military hospitals at Brussels, Antwerp and Termonde, where his experiences present many points of interesting comparison with those reported by surgeons visiting the same localities a century later. The relative magnitude of military operations in the Napoleonic era and at the present time is forcibly illustrated by the number of wounded soldiers to be dealt with:

"The official estimate of the number of wounded on June 16 and 18 was 8,000; those who could not be accommodated in Brussels were sent by canal to Antwerp. Several thousands of French wounded had been left on the field, and these were sent to Antwerp and Termonde. Thomson has a good deal to say about 'symptomatic fever,' which 'put on much of the appearance of a bilious remittent or continued fever,' and which began to prove fatal by the seventh day after the battle, and continued to be so till the twenty-first day, when the number of deaths suddenly diminished. The hospitals of Brussels and Antwerp were free from contagious fevers, a fact which Thomson attributes to the great attention paid in the British hospitals to cleanliness and ventilation and 'to the habits and discipline of our troops with regard to personal cleanliness.' Hospital gangrene, when once it had gained a footing in a ward, spread with considerable rapidity, but it is somewhat surprising to read that Thomson was doubtful as to its being communicated by one patient to another, and was inclined to be-

lieve that it was 'endemic and dependent on the same causes as the fevers of the country.' The number of cases of tetanus was inconsiderable, but the disease was of a chronic or mild type, 'a form of tetanus in which recovery often takes place without much aid from medicine.' As to gunshot wounds, Thomson says: 'No fear is now entertained, either by medical men or soldiers, of any kind of poison being introduced into the body by means of musket balls. All the consequences, immediate and remote, to which these balls give rise, are justly referred to the contusion, laceration and division occasioned by their impulse. Accordingly surgeons now no longer think it necessary to dilate, cauterize, or suck such wounds for the purpose of destroying or extracting poison.' Gunshot fractures of the femur were then, as now, a source of great anxiety to the surgeon. Various attempts were made to apply continuous extension, but apparently without much success. Secondary hemorrhage was frequent and usually occurred from the twentieth to the thirty-fifth day. Thomson concludes with a warm tribute to the humanity shown by the inhabitants of Brussels and Antwerp to the British wounded. Even after the hospitals were fully established, several hundreds were voluntarily received and taken care of by the inhabitants. Sir Charles Bell also hurried off to Brussels after the battle. He was accompanied by his brother-in-law, John Shaw, afterwards surgeon to the Middlesex Hospital. The only passports they had were surgical instruments, which Shaw shook in the faces of the officials; these credentials passed them. On July 1 Bell writes: 'It was thought that we were prepared for a great battle, yet here we are, eleven days after it, only making arrangements for the reception of the wounded.' He offered to perform all the capital operations on the wounded French. He was much struck by the appearance and 'capacity of adaptation' of Napoleon's soldiers. 'These fellows,' he writes, 'are brought from the field after lying many days on the ground, many dying, many in the agony, many miserably racked with pain and spasms, and the fellow next to him mimicks him and gives it a tune. Ah! ha! vous chantez bien!' After his return Bell wrote to his friend Francis Horner that he took the knife in his hand at six o'clock in the morning, and 'continued incessantly at work until seven in the evening; and so the second and third day. All the deencies of performing surgical operations were soon neglected. While I amputate one man's thigh there lay at one time thirteen, all beseeching to be taken next; one full of entreaty, one calling upon me to remember my promise to take him, another execrating. It was a strange thing to feel my clothes stiff with blood, and my arms powerless with the exertion of using the knife! And more extraordinary still, to find my mind calm amidst such variety of suffering.'"

A FRENCH SURGEON AND POET.

AN item in the issue of the *Lancet* for December 9, 1916, calls attention to some notes recently presented before the French Academy by M. Antoine Thomas on the life of Jean Pitart, a thirteenth century Parisian surgeon and poet, referred to in Puccinotti's "*Storia della Medicina*."

"The date and place of Jean Pitart's birth are unknown; probably he came from Normandy, and the close intimacy between him and Henri de Mondeville confirms this view. François Quesnay says he died, age 77, in 1315, but there is evidence that he was alive in 1325, because in that year the Comte de Valois in his will bequeathed 50 livres to Pitart.

The first authentic record of Pitart is at Paris in 1292, when he pays 20 sous as an impost as a resident in the Rue Neuve Notre-Dame. By 1298 he had risen to the rank of court surgeon, for in that year he was in receipt of fees as such from Philippe le Bel. In 1303 he accompanied Philippe 14 to the south of France, for an account of royal expenditure at Toulouse shows that, for 40 days' service, he was paid 7 livres 13 sous and certain apparel. In 1308 he was with Robert d'Artois at Conflans, and in 1312 he went to Artois to attend a certain countess, doubtless successfully, for he received for his services on that occasion no less than 100 livres, a large honorarium in those days; also robes for himself and Madame Pitart. He continued to be the royal surgeon under Louise X and Philippe V, for the latter presented him with property at Cotentin and elsewhere. Finally, in 1327, Charles IV calls him his '*dilectus chirurgicus*' in an act giving Pitart further emoluments.

Pitart's decease seems to have occurred at the end of 1328. An interesting event in his long career was his appointment as president of a committee decreed in 1311 by Philippe IV to inquire into the irregularities occurring in the surgical profession in Paris. The committee were empowered to register those persons worthy of exercising the duties of the craft, which had been usurped without any proper qualification by many barbers. These amateurs had been rounded up by Etienne Boileau, Prefect of Paris, in 1301, when 29 of them were prohibited from practising unless they passed some examination. Pitart probably had a hand in preparing the preamble of the edict promulgating the commission, for, as will be seen from the quotation, it condemns the abuses arising from the actions of uneducated persons, whilst flattering the citizens of Paris upon the erudition of its true scientists:—

'Ne in villa Parisiensi, quae proprie locus est fluentissimi fontis scientiae, quae etiam scientes pavit et, in utero recipiens ignorantes,

tandem suae fontis sapientiae germinosis rigatos rivales diversarum facultatum reddit scientiis insignitos, talia de cetero perpetrentur.'

M. Thomas designated Pitart a poet, one proof of his capacity in that profession being four lines of verse inscribed upon a well which he had caused to be dug in the Cité quarter of Paris; this was still in existence in the seventeenth century. The distich ran as follows:—

Jehan Pitard en ce repaire,
Chirurgien-le-roy, fit faire
Ce puits en (l'an) mil trois cent dix,
Dont Dieu lui doit son paradis.

Pitart excavated the well to prevent the neighbours drinking the dangerously polluted Seine water, and obviously considered the work meritorious. M. Thomas is also satisfied that Pitart wrote a poem, '*Le Dit de Bigamie*,' in which he refuted the views of those who held that a widower who re-married was a bigamist. Jean Pitart appears to have been a man of sound sense as well as of learning which was eminent in its day."

MEDICAL NOTES.

STATE WORK AGAINST INFANTILE PARALYSIS. —The Institute for Public Service of New York City has published a book called "*State Work Against Infantile Paralysis*" which is a record of the efforts made by forty-three state health departments and the United States Public Health Service to control and prevent epidemics of infantile paralysis. In a foreword Dr. Charles Bolduan, director of the New York City Bureau of Health Education, states: "The information here collected by this Institute for Public Service will prove invaluable to health officers throughout the world. Not one of them, even the most experienced, but will find in this compilation some useful suggestion which will facilitate his work. Moreover, the bringing together, as is here done, of the procedures followed in different cities and states should do much toward the introduction of standard methods and the adoption of uniform regulations."

REPORT OF INFANTILE PARALYSIS COMMITTEE. —A special committee formed for the purpose of conducting an inquiry into the causes and prevention of infantile paralysis, have made a report to Mayor Mitchell which gives the results of a study of 5496 cases. It asserts that "slight and non-paralytic cases are the most frequent sources of infections," as these cases arouse no suspicion and other persons come in contact with them; that the disease usually develops from 5 to 10 days after exposure, and that "previous good health does not give immunity from attack."

The report says males are apparently more susceptible than females. Parents are urged to

isolate sick children, the report holding that this precaution and early diagnosis of infected cases are of the greatest importance in preventing spread of the disease.

SOCIAL INSURANCE.—At the annual meeting of the American Medical Association the subject of social insurance was brought up, and the committee chosen to investigate and present a report on this question expressed itself in favor of both old age pensions and social insurance. The report stated:

"The fact that a very large portion of our working population earns only the necessary amount for a decent existence, and in many cases the earnings are below the minimum for the support of the family, has been repeatedly established by numerous investigations. The increase in activity of numerous charitable agencies—public and private—is sufficient evidence that wage conditions alone in this country are unable to cope with the grave problem of destitution."

Referring to the compulsory insurance laws in England, the report said: "One noticeable effect was the enormous amount of unsuspected sickness that it brought to light, especially among the women.

"These women had been unable to stop their work and properly care for themselves, but had to drag on half sick, struggling with their work," it added. "Physicians working among them were surprised at the amount of real illness which came to light when these people, by right and not by favor, could go to a physician and ask for proper care."

WAR NOTES.

RED CROSS UNITS ABROAD.—The safe arrival in England is announced of the Chicago base hospital, the last of the six American Red Cross units ordered abroad. A message from Mrs. Whitelaw Reid of London to Miss Mabel T. Boardman, announced that the New York, Boston and Cleveland units had already gone to hospitals in France. There are, now, therefore, one hundred forty-four American physicians in Europe, with twelve dentists, 390 Red Cross nurses and 900 enlisted men of the Medical Corps, the first organization of the United States Army to go abroad.

MILITARY PREPARATION IN NEW HAMPSHIRE.—At a meeting of the Committee of American Physicians for Medical Preparedness, held in Concord, N. H., Drs. John M. Gile of Hanover, Charles R. Walker of Concord and Emdon Fritz of Manchester were appointed a committee to communicate with the physicians and dentists of the State with reference to an agreement as to the conservation of their practice during their absence on Government service.

Drs. Ernest L. Bell of Plymouth, James B. Woodman of Franklin and Daniel C. Norton of

Manchester were named as a committee on Red Cross ambulance units from New Hampshire.

Prof. Richard F. Husband of Hanover, Dr. William A. Young of Concord and Dr. W. T. Crosby of Manchester were named as a committee on publicity.

AN INVESTIGATION OF THE HEALTH CONDITIONS IN THE NAVY.—Secretary of the Navy Josephus Daniels has named a special committee, to comprise Dr. Abraham Flexner of New York, Dr. William H. Welch of Johns Hopkins and Nathan Straus of New York, to investigate health conditions in the navy. They will be given permission by Admiral Mayo, the commander of the Atlantic fleet, to investigate to the fullest degree and in their own way.

MENINGITIS AT COMMONWEALTH PIER, BOSTON.—The sixth case of cerebro-spinal meningitis has occurred at Commonwealth Pier. The patient came to the station recently from Providence and was removed to the Chelsea Naval Hospital.

Medical Director J. M. Edgar stated that none of the cases was contracted at the pier and that there was absolutely no cause for fear that there may be an epidemic of sickness.

The men who have been seized with meningitis include men from Chicago, Providence, Newport and Waltham, and the cases were discovered at different periods, May 8, 10, 16, 21 and 22. The time in which the men have been at the receiving station has not been of a length to allow the disease to originate here.

MEMBERSHIP IN THE RED CROSS.—An increase of 644,097 in the total membership of the chapters of the Atlantic division of the American Red Cross since April is reported. Returns from membership campaigns in various cities give the following results: Buffalo, N. Y., 50,000 members; Waterbury, Conn., 5000 members; Atlantic City, N. J., 5000 members.

HARVARD AMBULANCE UNIT.—An ambulance unit of thirty-nine men, made up of Harvard students and graduates, has been recruited and has left Cambridge to go into training camp at Allentown, Pa. Maj. E. E. Persons of the medical corps will supervise the training. Another Harvard unit is being formed and will follow the first unit.

SUPPLIES NEEDED FOR BASE HOSPITAL No. 6.—The ladies' visiting committee of the Massachusetts General Hospital has issued an appeal for contributions for emergency supplies for the hospital unit, United States base hospital No. 6, under the direction of Dr. Frederic A. Washburn. Mrs. John Lowell of Chestnut Hill is treasurer of the fund.

SAFE ARRIVAL OF ORTHOPEDIC SURGEONS.—The report of the safe arrival of Dr. Joel Goldthwait with the unit of twenty orthopedic surgeons has been received. He has reached England and will begin his tour of inspection of orthopedic hospitals in England and on the continent.

WITHDRAWAL OF GERMAN UNIT.—The unit of Chicago physicians which has been stationed at Graudenz, Germany, has left Berlin for Norway and thence back to America.

The expedition was financed by the German-Austro-Hungarian relief committee. It has finished its work and given the equipment brought from the United States to the Military Hospital at Graudenz. On leaving Norway Dr. Frederick Hagler of St. Louis, the head of the party, said:

"Throughout our stay in Graudenz we were given every courtesy by the civil and military authorities. In the last few months at no time were we made to feel that we were 'hostile foreigners.' Our leavetaking was not extremely cordial, but the authorities were prompt in facilitating our departure for Denmark."

RAISING THE RED CROSS RELIEF FUND.—Plans are under way for securing the \$100,000,000 war relief fund by the American Red Cross. The week of June 18 to 25 has been set apart by President Wilson, and fifty expert money campaigners have been sent out to all parts of the country from the headquarters at Washington. They will assist local Red Cross chapters and committees in organizing such work. The plans, as announced by the finance committee, require the formation of ten subscription teams in each city.

In New York a man-to-man canvass of the Wall Street district will be made by leading financiers, among whom are J. Pierpont Morgan, Jacob H. Schiff, Frank A. Vanderlip, Cornelius N. Bliss, Jr., A. H. Wiggin and Charles H. Sabin. Subscriptions running into the millions are expected to be forthcoming from New York.

SCIENTIFIC AND ADMINISTRATIVE ACHIEVEMENT OF THE UNITED STATES ARMY MEDICAL CORPS.—In the issue of the *Scientific Monthly* for May, 1917, is an excellent article by Lt.-Col. Champe C. McCulloch, Jr., Librarian of the Surgeon-General's Library at Washington, presenting a historical summary of the scientific and administrative achievement of the medical corps of the United States Army from its beginnings under Morgan, Shippen and Rush during the Revolution. There is a peculiar appropriateness in this paper at the present time and its perusal is particularly of interest to civilian physicians about to enter the Medical Reserve Corps and hitherto, perhaps, unfamiliar with the amount, variety and extent of work accomplished during the past century by the Army Medical Corps.

PHYSICIANS CALLED TO ACCOUNT.—It is reported from the Medical Bureau of the War Department that about fifty per cent. of the physicians who have enlisted in the Medical Reserve Corps, and who have accepted commissions, have failed to report for duty. According to the department officials many of the physicians who have reported have no idea whatever of discipline. The failure of so large a percentage of the doctors to report is causing much confusion in the bureau, which has held consistently that trained physicians would be needed as badly by the new national army as trained officers. Unless the absent physicians report immediately, drastic legal action will be taken by the department.

IMMEDIATE NEED FOR SURGICAL DRESSINGS.—Word has been received by the Surgical Dressings Committee of the Peter Bent Brigham Hospital, from Paris, that huge supplies of sterilized dressings are needed at once. Although the committee is working at top speed, not only at the hospital, but in its branches throughout New England to get dressings ready for the Allied wounded, it will make still greater efforts to increase the supply of dressings shipped weekly to France. Besides its splendid work for the Allied wounded, the committee has outfitted and is outfitting Massachusetts base hospitals with dressings and, in response to the call of the Massachusetts General Hospital, was able to get ready fifty-two cases in a few days. While the committee has enough volunteers, it needs money, that its fund may meet the constantly increasing cost of supplies, particularly gauze. The sum of \$20,000 is needed to keep up its work during the summer. Checks may be drawn to the Surgical Dressings Committee and sent to the Old Colony Trust Company, 17 Court Street.

AMERICAN MEDICAL ASSOCIATION AND PROHIBITION.—The recent meeting of the American Medical Association has been noteworthy for its clear and decisive stand on all medical matters pertaining to the military exigencies of the present day. Its broad and practical patriotism has been no better demonstrated than in its attitude toward prohibition. Dr. Charles H. Mayo of Rochester, Minn., newly elected president of the Association, in his address stated that the medical profession would welcome national prohibition, that the value of prohibition as a war measure is beyond discussion. Medicine has reached a period when alcohol is rarely employed as a drug, being displaced by better remedies. Alcohol's only place now is in the arts and sciences. Dr. Charles S. Stokes, a retired surgeon-general of the United States Navy, urged bone dry territory in the vicinity of army camps. Dr. Haven Emerson, commissioner of health in New York, stated that the nation requires today three times as much alcohol as formerly, but

needs it for munitions. Other speakers who urged prohibition were Dr. Ernest S. Bishop, Dr. John D. Quackenbos and Dr. Delancy Carter.

A resolution declaring alcohol entirely without merit, from a medical viewpoint, was presented to the house of delegates, the governing body of the association, yesterday by Dr. Frank Billings of Chicago, chairman of the Council of Health and Public Instruction of the association.

The resolution declared it to be the unanimous opinion of the council of health that alcohol had no drug value, either as a tonic or a stimulant or in any other therapeutic way, that it has no value as a food or in the treatment of disease, and that its only legitimate use in medicine is as a preservative and in the preparation of pharmaceutical products. The resolution was referred to a committee. After much discussion the committee passed the resolution in the following form:

"Whereas, we believe the use of alcohol is detrimental to the human economy, and whereas, its use in therapeutics as a tonic or stimulant for food has no scientific value; therefore, be it resolved, that the American Medical Association is opposed to the use of alcohol as a beverage, and be it further resolved, that the use of alcohol as a therapeutic agent should be further discouraged."

MEDICAL NOTES.

WAR RELIEF FUNDS.—On June 16 the totals of the principal New England war relief funds reached the following amounts:

French Wounded Fund ..	\$232,866.72
Permanent Blind Fund ..	116,363.15
French Orphanage Fund ..	109,974.57
Surgical Dressings Fund ..	97,375.97
Polish Fund	75,856.84
Italian Fund	42,077.87
War Dogs' Fund	600.25

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending June 16, 1917, the number of deaths reported was 227 against 199 for the same period last year, with a rate of 15.33 against 13.65 last year. There were 25 deaths under one year of age against 26 last year, and 71 deaths over 60 years of age against 67 last year.

The number of cases of principal reportable diseases were: diphtheria, 94; scarlet fever, 23; measles, 236; whooping cough, 11; typhoid fever, 3; tuberculosis, 71. Included in the above were the following cases of non-residents: diphtheria, 11; measles, 2; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 8; measles, 2; tuberculosis, 20. Included in the above were the following cases of non-

residents: diphtheria, 1; measles, 1; tuberculosis, 3.

MIDDLESEX COLLEGE OF MEDICINE.—The Middlesex College of Medicine conferred degrees on twenty-nine members of the graduating class. Exercises were held at the College Building, East Cambridge, Mass. Thomas Jefferson Boynton of the Suffolk Law School spoke on "Law and Medicine" and William Muss-Arnolt, former professor of Semitic languages at the University of Chicago, spoke on "College and University."

MASSACHUSETTS ECLECTIC MEDICAL SOCIETY.—The fifty-seventh annual meeting of the Massachusetts Eclectic Medical Society was held recently at Hotel Brunswick, Boston.

Dr. Harrie V. Dunsmore read a paper on "Gynecology," Dr. Charles A. Pratt on "Spinal Irritation," Dr. Fred W. Derby on "The Eye," Dr. Arthur J. Boucher, "Rheumatism," Dr. William H. Hills, "Florida for the Health," and Dr. Frederick G. Phillimore, on "Belladonna." Officers were also elected and installed.

HEALTH DEPARTMENT OF BOSTON.—In its recently published monthly bulletin (issue of April, 1917) the Boston Health Department announces that it has established a free vaccination station at 17 Blossom Street, near Cambridge Street, West End, where all persons residing in Boston may obtain free vaccination. The Bulletin urges increased care in health matters, especially in communicable diseases, particularly at this time when every effort should be made to conserve the health of not only the civilian but the soldier population who are dependent one upon the other. The guarding of the large mobilization camps from the ravages of venereal disease is a step that is most emphatically demanded.

NATIONAL TUBERCULOSIS ASSOCIATION.—At the annual meeting of the National Association for the Study and Prevention of Tuberculosis, held in Cincinnati, May 9, 10 and 11, the Boston Association for the Relief and Control of Tuberculosis, through its President, Dr. Arthur K. Stone, presented a vote from the executive committee of the association, urging the National Association to hold its next annual meeting in Boston. The Mayor of Boston has also written to the National Association, urging them to come to this city. The Cincinnati meeting was the largest ever held,—over 800 persons registering as in attendance.

BABY HYGIENE ASSOCIATION.—The Baby Hygiene Association reports that during the month of May it cared for 2330 babies. The Association is preparing for the heavy demand on its services expected to follow the mobilization of American troops.

BABY CONSERVATION.—A committee on the Conservation of Child Life has been appointed by Dr. Allan J. McLaughlin, State Health Commissioner, to intensify the methods of baby conservation, in view of the loss of man power by reason of the war. He believes that the best nucleus for baby saving is probably the milk station of a baby hygiene association, although with this station as a centre must be co-ordinated prenatal work with mothers, good obstetrical care, and continued supervision of the child until school age. The committee appointed is as follows:

Dr. David L. Edsall, member of the public health council of the State Department of Health, chairman; Dr. William J. Gallivan, member of the public health council of the State Department of Health, and Dr. Lyman Asa Jones, director, division of hygiene of the State Department of Health, recorder.

The consulting members are:

Dr. Fritz B. Talbot, pediatricist, chief of children's medical department, Massachusetts General Hospital; Dr. Richard M. Smith, pediatricist, assistant in pediatrics, Harvard Medical School; Dr. Walter Fernald, psychiatrist, superintendent of the Massachusetts School for the Feeble-Minded; Dr. William Healy, psychologist, director of the Psychopathic Institute of the Juvenile Court, Chicago, and Miss Mary. Beard, director, Instructive District Nursing Association.

PREVENTION OF INFANTILE PARALYSIS.—Although the incidence of poliomyelitis in Massachusetts has been no more than normal, the State Department of Health is taking steps to prevent the onset of an epidemic such as occurred last summer. The department has issued a pamphlet for general distribution, stating the various theories of the method of transmission of the virus of poliomyelitis and urging that all exposed persons be quarantined for at least two weeks. Young children who show slight indispositions should be seen by a physician. Lumbar puncture and the administration of immune serum is advocated. Acute cases should be cared for in hospitals for the sake of both the patient and the community.

Miscellany.

UNIVERSITY OF CHICAGO MEDICAL SCHOOL.

IN a recent issue of the JOURNAL we noted somewhat incompletely the plan for the endowment of the Medical Department of the University of Chicago. In the issue of *Science* for November 17, appeared the following complete statement of this project and of the relations which it bears to the Rush Medical College.

"The General Education Board and the Rockefeller Foundation have appropriated \$2,000,000 (each \$1,000,000) for the establishment of a medical department in the University of Chicago. It brings Mr. Rockefeller's contributions to the university up to nearly \$37,000,000. funds for operation."

The university will set aside at least \$2,000,000 for the same purpose, will give a site on the Midway valued at \$500,000, and will raise a further sum of \$3,300,000. The medical school will therefore start with an endowment of almost \$8,000,000.

Rush Medical College, established seventy-five years ago, will go out of existence. The Presbyterian Hospital, which Rush College has used, will be taken over by the University of Chicago and will be reorganized to provide adequate clinical and laboratory facilities. A new laboratory building will be erected in immediate conjunction with the hospital. The buildings and grounds of the Presbyterian Hospital are valued at about \$3,000,000.

A statement given out by Dr. Abraham Flexner says:

This project will be giving the city of Chicago a high-grade medical school and it will also provide, for the first time in this country, a post-graduate school adequately equipped and financed.

The school will be erected on the Midway Plaisance, and will thus form a part of the present University of Chicago plant. High-grade modern laboratory buildings will be provided for instruction in the students' first and second years, and a university hospital under complete control of the university, with laboratories and an out-patient department, will be built on the Midway.

The entire teaching staff, clinical as well as laboratory, will be organized on the full-time basis. That is, all the teachers for clinical as well as laboratory studies will give their entire time to teaching and research in the university hospital and medical school. Professors and their assistants will hold their posts on condition that they become salaried university officials and that they accept personally no fees whatever for any medical or surgical services.

The only medical schools in the country today which have embraced the full-time teaching plan are Johns Hopkins Medical School and the medical department of Washington University, St. Louis.

The full-time scheme is a plan to insure to hospital work and medical teaching the undivided energy of eminent scientists whose efforts might otherwise be distracted by the conflicting demands of private practice and clinical teaching. The full-time scheme is an appeal to scientific interests and devotion of the clinician, and the results so far realized through the plan at Johns Hopkins have been most satisfactory.

It should be of increasing consequence to the public that the training of those studying to become doctors should be in charge of the most competent men obtainable, devoting their entire time to this work. Greatly increased efficiency and thoroughness should result, to the alleviation of suffering and the cure of disease.

The new institution thus to be established in Chicago will be equipped with every modern facility for medical instruction and with ample funds for operation.

In a later issue of *Science* was published the further following communication from a correspondent at the University of Chicago, relative to the endowment of the new medical school and descriptive of some of its plans:

"In outlining the plans and hopes of the University of Chicago at its recent quarter-centennial celebration President Harry Pratt Judson said that what was needed to complete a school of medicine at the university was provision for clinical work and a clinical staff at the Midway, and that in his judgment the first need was for a hospital wholly under the control of the university, for medical teaching and for medical research; and the second need was provision of adequate endowment, in order that the hospital itself might be beyond the necessity of being financed by income from its patients, and in order that the medical faculty might be free to pursue their work of investigation and instruction without recourse to personal practice.

In direct fulfilment of this hope and plan, the university board of trustees has just made one of the most important announcements in the history of the institution. The plan announced to be put into early operation provides for an undergraduate medical school, a graduate medical school and medical research. The first mentioned will be on the Midway Plaisance, in close connection with the science departments of the university. The standards of admission and of graduation will be as high as those of any medical schools in the country. The number of students will be limited to such as can receive the best possible training with the facilities available.

A teaching hospital, duly equipped with necessary laboratories and lecture rooms, will provide for clinical instruction. Suitable endowments will free the hospital from the necessity of depending on paying patients, and the faculty from the necessity of practice for a livelihood.

The graduate medical school will be on the west side, in connection with the work now done by the Rush Medical College and the Presbyterian Hospital. It will provide for medical graduates who wish further training and for practitioners who wish to keep in touch with progress in medical science. Research will be carried on in both places under the arrangements to be announced later.

The plan involves an addition to the resources of the university of the sum of five million three

hundred thousand dollars, one million for the hospital on the Midway, three hundred thousand for a laboratory on the west side and four millions for endowment.

Towards the endowment fund the Rockefeller Foundation offers one million dollars and the General Education Board one million dollars, provided the entire sum of five million three hundred thousand dollars shall be raised. Further pledges of individuals have been made to the amount of seven hundred thousand dollars. Thus two million seven hundred thousand dollars have already been secured. Two million six hundred thousand dollars remain to be secured and in the near future a campaign will be initiated to complete the fund.

In speaking of this announcement, which is probably the most significant that has ever been made in connection with higher medical education in Chicago, President Harry Pratt Judson says: 'The medical plans which have just been announced represent many years of hoping and working and dreaming. These plans, we think, will not merely be, when carried out, a great addition to the resources and power of the university, but will render a very valuable service to Chicago, and to the cause of medical teaching and investigation in the entire country.'

A later announcement is just made that half a million dollars towards this new medical fund for the University of Chicago has been given by Mr. and Mrs. Julius Rosenwald, of Chicago. Mr. Rosenwald, who is a trustee of the university and donor of the new Julius Rosenwald Hall devoted to the work of geology and geography, is one of the university's most generous and loyal friends; and Mrs. Rosenwald, who shares in this great gift, is widely known for her practical and constant sympathy with many movements for social and artistic advancement in Chicago.

At the meeting of the board of trustees of the university on November 14, the following committee was named to conduct the campaign for funds: President Harry Pratt Judson, chairman; Adolphus C. Bartlett, Dr. Frank Billings, Thomas E. Donnelley, Andrew MacLeish, Martin A. Ryerson, Julius Rosenwald, Robert L. Scott and Harold H. Swift."

SANITATION AND PUBLIC HEALTH IN SOUTH AMERICA.

In comparing public health conditions of South America and the well-cared-for portions of Europe and the United States, it is interesting to note, from recently published reports, that South America takes equal place. The countries of Brazil, Uruguay and Argentina can give as clean a bill of health as can the leading cities of the world.

The mortality statistics for Uruguay show that one-third of the deaths are of foreign-born persons, the Italians leading, with the Spaniards coming next and persons from adjacent countries last.

"In point of the saving of the babies, a matter in which Argentina has long been held up as a model, Uruguay presents the mortality figure of 11.5 per thousand births, the whole condition being comparable fairly well with that of a city in the United States which has given attention to this matter. An analysis of the figures of this mortality shows, what is a little curious, that more than one-quarter of the babies died from ill-defined or unspecified maladies. In number the total of these is about one-seventh of the ill-defined infants' deaths of this country, with its forty times greater registered population—a fact which shows that in Uruguay diagnosis has need of improvement, although for that matter there are portions of this country that are equally in need of improvement. As in the North, diarrhoea and enteritis stand as the largest cause of the death of babies—one-quarter of the total infantile mortality; broncho-pneumonia is the second cause, with one ninth of the whole, followed fairly closely by congenital troubles and by meningitis, with half as many for its toll as broncho-pneumonia.

Montevideo has a fairly high rate of mortality, sixteen to twenty being shown in the monthly returns, broncho-pneumonia disputing the highest place with consumption. Heart disease has not there yet asserted itself with the emphasis that characterizes the vital statistics of our country, being less deadly in general than apoplexy. The trimester under consideration—April to June, 1916—is in the cooler weather and shows no marked toll of infants, broncho-pneumonia being their greatest enemy. In mortality by races in Montevideo, the Italians show that lack of immunity which characterizes them in this country, and they furnish about one-sixth of the total mortality.

The application of sera is considerable in this South American city, amounting to 7000 to 10,000 cubic centimeters a month of anti-diphtheric vaccines, one-quarter as much antitetanic, an equal amount of tuberculin, mostly in testing cattle, while the anti-rabic service cares for five to seven persons each month."

Argentina is the centre for great immigration and the same condition holds true here as does in Uruguay, that Italians show less power of resistance than other nationalities, and comprise one-fifth of the number of deaths in the state. The Spaniards show a rate of about one-eighth.

"Next to tuberculosis, typhoid fever is the important infection, with a toll of forty a month, a rate of perhaps three or four times that of Boston. Tuberculosis has a rate in Buenos Aires of nearly one-half more than in Boston; broncho-pneumonia is in the autumn season much less serious than heart disease, infantile diarrhea, or tuberculosis, which is by far the

most deadly of the diseases in this country. It takes its place with cancer, brain congestion, meningitis and congenital debility as among the more important of the causes of death. Infantile mortality, which is one of the most widely discussed features of the Argentine vital tables, stands at about seventy per thousand births."

"In the mixture of races which the freedom of travel engenders, South America is less a melting-pot than this country, still it is making its mark on the population. In this important district in Argentina the mothers of the year 1914 were 63 per cent. Argentinian, 20 per cent. Italian and 9 per cent. Spanish, while the fathers were in the ratios 66 per cent., 23 per cent. and 8 per cent. Other South Americans, together with French speaking nations and Teutons, cut a very small figure here."

A compilation of vital statistics for Rio Janeiro has recently been issued by Dr. Enrico Rangel, director of the section of Demography of the Public Health Office. He states that in the district included, which contains nearly one million population, the mortality rate for the city is 20 and for the suburbs, 22.

"Half a century ago the mortality rate of Rio was about 50, and since that time it has been steadily decreased, till in 1898 the figure passed below 30; in 1908 below 25 and now it may generally be expressed as at 20. Some of the special years are indeed high, as in 1860 when it touched 71, while the downward progress was interrupted in 1904 and again in 1908 by outbreaks of smallpox which sent the figure up to unusually high ratings, 32, for example, in a period of 20 for the normal.

"To illustrate what this decrease means, Dr. Rangel presents a list of important cities in the world and in Brazil. In South America, against the notably high figure of Brazil at 20.85 per thousand of population, there is Callao, 44.43; Santiago, 39.64; Caraccas, 35.58, and Valparaiso, 20.47; in other tropical countries there are, Mexico, 40.58; Cairo, 36.90; Bombay, 33.06; Alexandria, 29.14; Calcutta, 28.13, and Manila, 23.82."

To show the progress of elimination of yellow fever, it is stated that in the five years 1909-13 there were twelve cases with ten deaths as compared with 1118 cases and 584 deaths in 1903 and a mortality of 4000 in 1850, and 3659 in 1873.

"The decline of typhoid has been rapid and steady, and from a figure of 14 per 1000 of population, in the early seventies, it dropped to 7 five years later, to 4 and 3 in the eighties and now its rate is about half a person per 10,000. Boston's rate in 1910, 1911, 1912 and 1913 was 1.16, .91, .97, and .82; while that of Rio for the same years was .55, .56, .56 and .83. Tuberculosis is not, however, so well in hand, for its rates are comparatively high. Although much lower than in earlier years, the figures since 1904 are all forties and do not show consistent decrease,

while for comparison those of Boston may be noted as 14 for 1913 against 44 of Rio.

This group of statistics is sufficient to suggest to those not having the opportunity to see the returns from the southern half of the world what the lines of sanitary advance are and what progress is being made by the great countries, some of which are popularly regarded with some apprehension in popular health discussions."

FIRST NATIONAL MEDICAL CONGRESS OF THE ARGENTINE REPUBLIC.

THE First National Medical Congress of the Argentine Republic was held in Buenos Aires from September 17 to 24, inclusive, 1916. About one thousand delegates from the City of Buenos Aires, the different Argentine provinces and from six of the South American republics, participated in the proceedings of the Congress.

The foreign delegates were from Brazil, Paraguay, Uruguay, Chile, Peru and Bolivia. The delegation from Brazil was composed of the following members: Doctors Aloysio de Castro, dean of the Medical College of Rio de Janeiro; Bruno Lobo, director of the Museum of Natural History and professor of microbiology; Samuel Libanio, professor in the Bello Horizonte Medical College, Minas Ceraes; Carlos Chagas, member of the Academy of Medicine; Oscar d'Utro Silya y O. Ribeiro da Fonseca, representing the Oswaldo Cruz Institute; Dr. Figuer do Rodrigues and Dr. Thompson Netto. Doctors Antonio Carina, delegate of the Faculty of Medicine of Sao Paulo, Vital Brazil, Olimpio da Fonseca, Jose Thompson Costa, Boaldo Cruz, Aragao, Sanotte, Cabazonne and Veyga. Paraguay was represented by Luis E. Migona, Tomás Bello and Luis Zenetti Cayosoni; Uruguay by Doctors Scosseria, Navarro, Ricaldoni, Morquiu, J. Gonzalez, Hector Cobas, Juan S. Burnett, Rosello, Lacimur, Pujol, Dalger, Caminara, Brito Foresti and A. M. Oyuela, and others; and Chile by Doctors Amunategui, Maira and Sanhuesa; Peru by Dr. Esconiel, Dr. Sanchez Ascorbe; and Bolivia, Dr. Villazon and Dr. Juan M. Escalier.

The inaugural session was held in Colon Theatre on Sunday afternoon, September 17, Dr. Saavedra Lamas, Minister of Public Instruction of the Argentine Government, presiding. Dr. Gregorio Aráoz Alfaro of the City of Buenos Aires was unanimously elected President of the Congress, as were Doctors Carlos Bonorino Udaondo, Juan Carlos Navarro and Bernardo Houssey, secretaries.

In his opening address, among other things, President Gregorio Aráoz Alfaro said, in substance, that it was necessary to fix the scope and bounds of the Congress; that up to that time only scientific and international medical con-

gresses had been held in the country, but that the present Congress is genuinely Argentine; that its object is to investigate local conditions of sanitation and hygiene, and the study of the pathology and climatology of the Republic, with the object of placing the profession in Argentina on a level with the most advanced countries in the world in medical science. The President expressed the hope that this Congress would emphasize more and more the social mission of the physician, not only to cure but to prevent disease, and to strengthen and prepare the race for future generations of people more vigorous, healthy and happy than the present inhabitants of the land.

The business meetings of the Congress were held in the lecture hall of the medical college. About five hundred papers were presented for consideration. The work of the Congress was divided into sections, the principal of which were: Medical clinics and therapeutics, biology and pathology, obstetrics and gynecology, pharmacy and chemistry, general surgery, theory and practice of medicine, military sanitation, ophthalmology, odontology, pediatrics, dermatology, microbiology and laryngoscopy.

The Congress, which closed on the 24th of September, 1916, sanctioned the following recommendations:

The First National Congress of Medicine, realizing the great importance which the preservation of infancy has in every campaign against tuberculosis, recommends to the public authorities the following:

The founding of hospitals for the housing of children suffering with tuberculosis, the establishment at the seashore, on the plains or in the mountains, of sanatoria for treating children, who, without having outward signs of consumption, are of a delicate constitution, poorly fed and in danger of contracting the disease, and the adoption of prophylactic measures to protect the newly born and suckling babes of consumptive mothers.

The Congress recommended a thorough and critical revision of Argentine medical studies, for the purpose of securing a preponderance of important general studies, including in the curriculum the study of the history of medicine and its principles, comparative science and the genetics of evolution, general physiology and biology, and methods tending to increase the fund of medical knowledge. The board of directors of the Faculty of Medical Science of Buenos Aires is requested to take into consideration the plan submitted by the Faculty of the College of Dentistry concerning changing the present plan and decide same as early as possible.

The executive committee of the Congress was instructed to compile an index of medical biography.

A committee was appointed to choose the place of meeting of the Second National Medical Con-

gress. This committee selected Cordoba, Argentine Republic, in 1920, the exact date to be determined later. The following board of directors, consisting of physicians from the city of Cordoba, was appointed to arrange for the preliminary work and the holding of this Congress: Doctors Garzón, Maceda, Gomez, Martinez, Duceschi, Allende, Pitt and others.

The South American Association of Hygiene, Microbiology and Pathology of Buenos Aires, which participated in the First National Medical Congress, held its last annual meeting for the present year on September 25, 1916, under the presidency of Dr. Rudolph Kraus. At this meeting it was decided to hold in Rio de Janeiro, in 1917, a Conference of Hygiene, Microbiology and Pathology. Dr. Oswaldo Cruz of Rio de Janeiro was chosen President of said Conference.

UNITED STATES CIVIL-SERVICE EXAMINATIONS.

PHYSICIAN (MALE).

JULY 10, 1917.

The United States Civil Service Commission announces an open competitive examination for physician, for men only. Present and future vacancies in the positions of physician in the Indian and Panama Canal Services, acting assistant surgeon in the Public Health Service, surgeon and assistant surgeon in the Coast and Geodetic Survey, and in positions requiring similar qualifications in other branches of the service, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

Certification for filling vacancies in the Public Health Service will be made of the highest eligibles residing in the vicinity of the place at which the appointee is to be employed, except that upon the request of the department certification will be made of the highest eligibles on the register for the entire country who have expressed willingness to accept appointment where the vacancy exists.

The applicant must have graduated from a medical school of recognized standing or be a senior student in such an institution and furnish proof of actual graduation within six months from the date of the examination. Additional credit will be given to competitors for physician positions in the Tropics, who have had special training in tropical medicine. Only persons who have had at least two years' experience in the practice of their profession since graduation will be eligible for appointment to the position of acting assistant surgeon in the Public Health Service.

The number of surgeons and assistant surgeons in the Coast and Geodetic Survey actually employed and under pay at any time is nine. Four of these are employed in Alaska and on the Pacific coast, four in the Philippines, and one on the Atlantic coast and in Porto Rico. Officers serving in the Philippines receive 20 per cent. additional pay and are usually relieved at the end of three years. All surgeons and assistant surgeons are attached to vessels; and while their first duty is to conserve the health of the crew, it is expected that they will take part in the work of the survey. Appointments will be confined to those who indicate in the personal question sheet of the examination willingness to accept service in any of the regions named.

Applicants must have reached their twenty-first birthday on the date of the examination, but eligibles who were more than 40 years of age on the day of the examination will not be certified except for filling vacancies in the position of acting assistant surgeon in

the Public Health Service, and eligibles who were less than 22 or more than 30 years of age on the day of the examination will not be certified for positions in the Panama Canal Service.

For positions in the Public Health Service and in the Coast and Geodetic Survey the medical certificates in the application form must be executed by an officer of the Public Health Service, except that when this requirement would work a hardship upon an applicant because of his distance from such officer he may have the certificate executed by any physician. In this event, however, he may be required to pass a physical examination before an officer of the Public Health Service before appointment.

Statements as to training and experience are accepted subject to verification.

This examination is open to all male citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications should be properly executed, including the medical certificate, but excluding the county officer's certificate, and must be filed with the Commission at Washington prior to the hour of closing business on July 10, 1917. The exact title of the examination, as given at the head of this announcement, should be stated in the application form.

ANATOMIST.

JULY 11, 1917.

The United States Civil Service Commission announces an open competitive examination for anatomist, for both men and women, on July 11, 1917. A vacancy in the Army Medical Museum, Office of the Surgeon General, Washington, D. C., at \$1,600 a year, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

As an insufficient number of applications were filed for the examination of May 16, 1917, qualified persons are urged to apply.

As prerequisites for consideration for this position the appointee must have at least a collegiate degree, and have a thorough knowledge of the anatomy (and be experienced in the dissection) of disease-bearing mosquitoes of Southern United States, Panama, and the West Indies, and the Philippine Islands, and the relation of mosquitoes to the transmission of disease. A knowledge of pathology, bacteriology, and pathologic histology is also required, and the appointee must be capable of making photomicrographs, must understand microscopes, and be able to prepare, card, and keep in order museum specimens.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must be examined in the State or Territory in which they reside and have been actually domiciled in such State or Territory for at least one year previous to the examination, and must have the county officer's certificate in the application form executed.

Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted.

This examination is open to all citizens of the United States who meet the requirements.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications should be properly executed, excluding the medical certificate, and filed with the Commission at Washington in time to arrange for the examination at the place selected by the applicant. The exact title of the examination, as given at the head of this announcement, should be stated in the application form.

The Boston Medical and Surgical Journal

TABLE OF CONTENTS

June 28, 1917

ORIGINAL ARTICLES

- LOSS OF SIGHT FROM POSTERIOR ACCESSORY SINUS DISEASE, WITH REPORT OF THREE CASES. By Leon E. White, M.D., Boston. 501
- ON CRANIAL MEASUREMENTS OF PERSONS DYING IN INSANE HOSPITALS. By Lawson Gentry Leavay, M.D., Boston. 590

CLINICAL DEPARTMENT

- TWO CASES OF LEIOMYOSARCOMA. By C. H. Hare, M.D., Boston. 901

BOOK REVIEWS

- The After-Treatment of Operations. By P. Lockhart-Mummery, F.R.C.S. 902
- On Modern Methods of Treating Fractures. By Ernest Hey Groves, M.D. 902
- The Breast: Its Anomalies, Its Diseases, and Their Treatment. By John B. Deaver, M.D., Joseph McFarland, M.D., and J. Leon Herman, M.D. 903

EDITORIALS

- MUNERS' CONSUMPTION. 904
- LETANUS IN WAR AND PEACE. 904
- MEDICAL NOTES. 905

THE MASSACHUSETTS MEDICAL SOCIETY

- ANNUAL MEETING OF THE COUNCIL. 910
- NOTES FROM THE DISTRICT MEDICAL SOCIETIES. 919

HARVARD MEDICAL SCHOOL

- DEPARTMENT OF PREVENTIVE MEDICINE AND HYGIENE. 919

CORRESPONDENCE

- A CORRECTION. Francis H. Williams. 922
- MASSACHUSETTS COMMITTEE FOR THE STATE CARE AND TREATMENT OF SOLDIERS SUFFERING FROM NERVOUS AND MENTAL DISEASES. L. Vernon Briggs. 923

MISCELLANY

- RESOLUTIONS ADOPTED BY THE LYNN MEDICAL FRATERNITY. .. 919
- ORGANIZATION OF AMERICAN BASE HOSPITAL UNITS. 919
- APPEAL FOR RED CROSS VOLUNTEERS. 921
- NOTICES, APPOINTMENTS, RECENT DEATHS, ETC. 922

Original Articles

LOSS OF SIGHT FROM POSTERIOR ACCESSORY SINUS DISEASE. WITH REPORT OF THREE CASES.*

BY LEON E. WHITE, M.D., BOSTON.

Fellow in Otolaryngology, Harvard University; Assistant Aural Surgeon, Massachusetts Charitable Eye and Ear Infirmary.

UNPREPAREDNESS in America is well illustrated by our knowledge on unusual cases. Limiting ourselves, as we do, to but a small portion of the great field of medicine, we find there are subjects even in this seemingly small field about which most of us have only an exceedingly vague knowledge.

While we are conversant with the literature and investigative work done on the ordinary run of cases, there is no special incentive to look up subjects that may never be of any practical application. It is only when some special case is forcibly called to our attention that we take the time to find out what others have done. We always hope that the field has not been well covered, that there may be a chance for us to do a little original research work, but are doomed, in most instances, to find that it has been so thoroughly investigated that little or nothing can be added.

The study of retrobulbar neuritis from accessory sinus disease is no exception. So well has the ground been covered by such writers as

Birch-Hirschfeld, Onodi, Loeb, Holmes, Sluder, Knapp, Killian, Hajek, de Schweinitz, Posey, de Kleyn, Berger, Van der Hoeve, Halstead, and many others, that excepting the report of an occasional case or some pathological findings, little or nothing can be added.

Before reporting my own cases I feel that a review of a few of the conclusions and some of the cases found in the literature will be of interest:—

The observations of Beer in 1817 are the earliest writings I have been able to find pertaining to this subject. He says, in an article, "On Vicarious Blindness from Suppressed Snuffles, without Evident Accumulation of Mucus in the Frontal Sinus," "that the recognition of this form of amaurosis (or literally black cataract) is greatly facilitated by a history of a severe and suddenly suppressed cold in the head immediately preceding the ocular complication." Beer further says that "the cases all do well if one is able to re-establish a copious discharge of mucus from the nose"; without doubt Beer had to do with retrobulbar neuritis due to retention of pus in one of the posterior accessory sinuses.

In 1886, Berger and Tyrman, who were among the first to study the anatomical relations of the optic nerve, reported their findings in the examination of the differences in the partition wall between the optic nerve and the sphenoidal sinus. They also gave a brief review of the previously reported cases of blindness, some 26 in number, arising from sphenoidal disease.

In 1896, Dr. C. R. Holmes reported a case

* Read before the New England Ophthalmological Society at Boston, Feb. 8, 1916.

of "Unrecognized Empyema of Left Sphenoidal Sinus with Intense Headaches and Total Loss of Sight in Left Eye," etc., which was such a typical case showing the result of pressure on the optic nerve whenever the exit of the pus in the sphenoid became obstructed, that it has, since then, been referred to by many writers on this subject:

The patient when first seen had pain in the left eye with vision 20-100; margins of disc slightly hazy; some venous engorgement; field of vision normal. The left nostril was almost completely closed by deviation of the septum and hypertrophy of the middle turbinate. Within two weeks the eye became totally blind and the optic nerve white. The sphenoidal sinus was opened and pus found. The case improved at first, but had several relapses due to faulty drainage. Vision improved so that at the end of five months she could see the face of a watch well enough to tell the time.

The following case of Dr. Holmes illustrates the seriousness of sphenoidal disease:—

The patient had suffered from marked nasal obstruction for twenty years and trouble with his eyes for four years. During a cold he would complain of pain in the temples and deep behind the eyes. Examination revealed both nostrils free from pus, but practically occluded by enormously swollen turbinates. A few days after the removal of a portion of the inferior turbinate the patient was suddenly seized with intense pains in the head and expired in about twelve hours, with symptoms of cerebral hemorrhage. The post mortem showed a blood clot covering the area of the sella turcica, anterior clinoid process and optic chiasm. On removing this it was found that the dura and bony roof over the sphenoidal cavity had been entirely destroyed.

In 1906, Schmiegelow reports two cases of retrobulbar neuritis due to latent suppuration of the sphenoidal and ethmoidal sinuses.

The other case was that of an 18-year-old girl vomiting and headache. Vision in one eye only was affected. There was no subjective nasal symptom. Examination, however, revealed pus in the sphenoid, which was opened, as well as the posterior ethmoid cell. Vision at once improved.

The other case was that of an 18-year old girl with optic atrophy which ran a varying and chronic course without signs or history of any acute neuritis. Both eyes became involved in the course of two and a half years. Examination showed double purulent sinusitis of both sphenoids and ethmoids. Headaches disappeared and vision improved after the sinuses had been opened and drained.

Knapp reported a case with nausea and frontal headache followed in two weeks with loss of sight in left eye to 20-70.

There was a pronounced neuro-retinitis. The visual field showed a normal periphery with a central scotoma for white and colors. Pus and crusts were found in the nose. The removal of a portion of the middle turbinate was followed by a great escape of

pus, with improvement of the vision within 24 hours to 20-50. At the end of seven weeks vision was normal. Six weeks after the beginning of blindness in the left eye, the right eye was similarly but less markedly affected, which responded to treatment similar to that on the left side.

Sluder reported a case where blindness came on in both eyes 3 or 4 days after an acute coryza. The superior meatus was shut by swollen tissue. Treatment was followed by escape of pus and eventual restoration of vision.

Wiener reports a case of double retrobulbar neuritis in a specific patient where absolute blindness came on within 24 hours.

History of a coryza; had dull pain over middle of forehead. The fundi showed a low grade of optic neuritis; discs pale; veins engorged and tortuous; crusts and muco-purulent secretion found in both sides of nose. As the case did not respond at the end of 4 days to nasal treatment, the middle turbinate was removed on one side and the ethmoid cells cleaned out. Offensive pus was evacuated. Two days later the other side was operated on similarly and a similar condition found. A vision of 20-200 returned in one eye, while the other remained permanently blind. Both nerves showed some atrophic changes. Specific treatment was of no benefit.

Another case of Wiener's was in a perfectly healthy 9-year-old child where complete blindness came on within 10 hours following an acute coryza. There was some frontal headache. Fundi showed double optic neuritis with dilated and tortuous retinal veins. The nose was filled with a muco-purulent secretion. The patient improved under local treatment, and at the end of 4 weeks had vision of 20-70 in both eyes.

Paunz reports 6 cases.

In one, there was pain in one eye two weeks, with vision 5-50; paracentral scotoma. Pus was found in the ethmoids. Three months later the vision was 5-5 but the scotoma still remained and the fundus showed some choroidal changes.

A second case had coryza for a month with pain and partial loss of vision in one eye; central color scotoma absolute for blue, relative for red. In the operation on the posterior ethmoids no pus was found, only thickened mucosa. Five days later, vision 5-5 and scotoma less marked.

A third case had a specific history but failed to improve under inunctions; in fact, he grew worse until vision was for light perception in one eye and 5-50 in the other. In the operation on the nose polypi and hypertrophied tissue were found but no pus. Within 10 days vision was 5-5.

His fourth case was one of chronic retrobulbar neuritis, both eyes, with vision 5-70. Loss of vision had been gradual for 4 months. Central color scotoma. Both disks showed pallor on temporal halves. Pus was found in the left antrum, ethmoid and sphenoid. Seven weeks later vision 5-15 in one eye and 5-10 in the other. Color scotoma had disappeared, fundi unchanged.

The fifth case was of one week's duration with total blindness; crusts and pus found in posterior ethmoid cells both sides. Specific remedies failed to help, no specific history. Both disks became atrophic. Blindness permanent.

In his sixth case loss of vision came on after a cold. Eyes blurry in the morning, was blind at night. Fundi normal, no perception of light. The operation on left ethmoids evacuated considerable pus. Vision improved at first, then as it dropped, the right ethmoid was opened. Thereafter vision improved regularly and was normal in one month.

In 1909, Kranss reports a case of unilateral retrobulbar neuritis with large central scotoma. The nerve showed slight, if any, change, but the retina was hazy in the macular region. Draining the ethmoid cells brought immediate relief.

Stark reported three interesting cases before the ophthalmological section of the American Medical Association in 1915.

In one case, 10 weeks after an injury causing a fracture at the base of the skull, the vision in one eye suddenly became obscured. He could read in the morning but by evening could see objects only indistinctly. Vision 21-100. No fundus changes found except a possible engorgement of the retinal vessels. Peripheral field of vision normal for white but an absolute color scotoma for red and green. Empyema of the ethmoids was found and drainage obtained by the removal of the anterior end of the middle turbinate. Three months after this operation vision was normal, although the central scotoma for red and green lasted a year.

In the second case the vision in one eye became suddenly dim some four weeks after an acute rhinitis and a few days after having severe pain on the side of the head. The fundus was perfectly normal. Nasal examination showed a polypoid degeneration of the middle turbinate on the affected side. The removal of the anterior end was followed by temporary improvement, but as there were three attacks of pain with loss of vision within three months it was necessary to remove the remainder of the middle turbinate and clean out the ethmoid cells. In four weeks the vision was normal and so remained.

In the third case the patient, a physician, became suddenly blind while driving his automobile. Vision, when examined a short time later, was 20-30 right, and 20-15 left. Fundi fairly normal. Peripheral field for white normal. Absolute central color scotoma for red and green. After the escape of half a teaspoonful of foul smelling pus from the nose the vision improved so that it was normal within a few hours and the color scotoma disappeared.

Copeze reports a case of blindness from sphenoidal sinus disease:

Influenza was the cause. Operation on one of the sphenoids was followed by improvement of vision in the opposite eye only. Optic atrophy followed in the eye on the operated side.

Caldwell had a case which showed marked hyperemia of the disk with final atrophy of both optic nerves as a result of ethmoid and sphenoid disease.

Halstead's patient had sudden blindness in the left eye resulting from disease of the antrum, ethmoids and sphenoid sinus on the right side.

The vision returned after operation. He thought this contralateral involvement was caused by a rupture of sphenoidal septum, but later investigations show that the left optic nerve can be in relation to the right sphenoid, or vice-versa.

In an article published in 1910, de Schweinitz says in regard to scotoma as a result of sinus disease, that, "in a certain number of cases, the manifestation is that of a retrobulbar neuritis with its well-known symptoms of obscuration of vision beginning in the central field and rapidly progressing to complete or nearly complete blindness. At first the ophthalmoscopic appearances are negative but later there is blurring of the margins of the disk, diminution of the calibre of the retinal arteries, and pain on movement of the eyeball. In the study of this affection, not infrequently the sinuses have been neglected," "or rhinologic examination has failed to detect sinus infection where later investigations, or later results, have demonstrated well marked disease."

He reports a case that has many interesting features:—

Vision, when first seen, was 6-30 in each eye. The eye grounds were normal. The vision continued to fail. There was a delicate ringed scotoma in the left field, and a triangular paracentral scotoma in the right. Intranasal examinations showed only a universal congestion; that is to say, there was no pus, no polypi or no definite lesion indicating sinus disease. The x-ray examination was likewise negative. The left sphenoid was catheterized and a small quantity of pus withdrawn. Vision was now reduced to the ability to distinguish the largest typed letters at a few centimeters from her eye. Vigorous treatment, consisting of hot vapor baths, the administration of small repeated doses of mercury and suitable intranasal treatment, together with washing out of the sphenoid sinus at stated intervals, was followed by a measure of relief, and by a slight improvement in vision. After a year's residence in warm climates, the field of vision was found normal, and the vision had risen to 6-25.

In the *New York Medical Journal*, March 2, 1907, Posey says:—

"The connection between a sinusitis and an ocular inflammation can often be made only after very skillful and repeated examinations. Until within a very short time many ophthalmologists dismissed the possibility that an ocular inflammation could have originated in a sinusitis, by the patient's declaration that he did not have at the time, or shortly before, a bad cold in his head, or by the statement of an assistant, who took but a hasty view of the nares, that there was no pus in the nose."

"That congestion of the sinus, without exudation, is sufficient to occasion ocular symptoms....I have seen demonstrated in cases where competent rhinologists had failed to discover any exudate in the sinus whatever."

"There were cases of retrobulbar inflammation of the optic nerve which were observed in earlier

years following grippe and in association with catching cold or rheumatism, where in place of the simple and effective treatment directed to the sinuses, they received active and often depressing and harmful general medication; as a consequence, blindness was the not infrequent result."

That there are many cases of optic neuritis not due to accessory sinus disease hardly needs mentioning, but there must be many cases where the origin is in doubt. Hajek expressed this thought well when he said:—"That the teaching of a common rhinologic origin for retrobulbar neuritis did not rest on a solid basis so far as actual proof is concerned." While he obtained improvement in some cases after opening the ethmoid cells without finding any disease, in other cases where sinus disease was suspected, but not found, no improvement resulted and the patients eventually became blind.

Birch-Hirschfeld has contributed much interesting and instructive literature on this subject. His article on his findings in a case of carcinoma of the posterior ethmoid cells, producing optic neuritis with central scotoma, has been quoted by many subsequent writers. The histological examination in this case revealed venous stasis due to compression of the orbital veins by the tumor, and isolated disease of the papillomacular bundle posterior to the site of entrance of the vessels into the optic nerve. This consisted in an edema of the optic nerve, swelling and proliferation of the glia cells, and disintegration of the nerve fibres.

This author believes the central scotoma, in diseases of the accessory sinuses, to be due to a venous stasis brought about by an extension of the inflammation in the sinuses to the blood vessels at the apex of the orbit.

As the concluding deductions in a long and excellent article by Loeb on the "Relations of the Optic Nerve to the Accessory Cavities of the Nose," published in 1909, he says:—

"Sphenoid sinusitis would naturally be called to account as the prolific cause of the infection in nerve involvement but for the fact that the sphenoid is less commonly affected than the other sinuses, and, except in closed empyema, the pus is evacuated in a large measure through the nasal opening. Stagnant and decomposing pus is more or less common on the floor, that part farthest removed from the optic nerve; but this factor becomes most potent where the orifice is at the level or about the optic nerve as shown in 4 out of 15 heads, as the likelihood of trouble is greatly increased by the immediate propinquity of the stagnant and decomposing pus, which in these cases is separated from the nerve only by a thin lamina of bone and the nerve sheath."

In 7, out of the 15 heads studied, one sphenoidal sinus was found to be in relation to both optic nerves, which explains sufficiently contralateral optic neuritis.

"The posterior ethmoid cells are frequently affected but have little influence on the optic nerve on account of the meagerness of their relation, viz., the posterior external angle. When, however, the posterior ethmoid cell replaces a portion of the sphenoidal sinus, the optic nerve in its passage along the external wall becomes most vulnerable as it is closer to the mass of pus and for a greater distance than under any other circumstances."

In a later article, Loeb reports an instructive case in which the radiograph showed both ethmoids obscured, and in which, on operating, he found enough trouble to warrant his diagnosis of an acute ethmoiditis just becoming purulent.

His case was of five weeks' duration with increasing loss of vision for three weeks. One week after removal of both middle turbinates and cleaning out the ethmoid labyrinths the vision was about normal.

To Onodi is due great credit for his research work on the relations of the accessory sinuses to the optic nerve. He has written several books which are profusely illustrated with life-size photographs of sections through the sinuses made in every conceivable way. He has also traced the development of the sinuses from the foetal stage to maturity and has also studied the sinuses from x-ray plates.

Onodi's findings furnish the anatomic foundation for the theory of blindness from accessory sinus disease, and explain contralateral and double-sided blindness from one-sided sinus disease.

He also investigated the enlargement of the blind spot in posterior accessory sinus disease, and found it present 38 times in 70 cases showing empyema. He reports a case of long standing optic atrophy on one side and optic neuritis and temporal hemianopsia on the other, where slight improvement followed an operation on the posterior ethmoids and sphenoid.

CASE 1 has been reported in full in the BOSTON MEDICAL AND SURGICAL JOURNAL,* but briefly is as follows:—

Miss R. S., 23 years of age, was seen five years ago. She gave a history of gradual loss of sight and severe pain of almost daily occurrence in and behind the left eye for two years. The sight was so poor that Dr. H. B. Chandler, who referred the case, could not get her visual field. He reported the case to be one of retrobulbar neuritis with a fairly normal fundus. On nasal examination pus was seen in the region of the left sphenoid and an exploratory operation advised. Advice was not acted upon and her subsequent history has shown a further loss of sight so that at the present time vision is only for light and darkness. The left-sided purulent discharge and the pain have persisted off and on ever since.

When x-rayed five years ago the plates were negative, but four years later they showed an ethmoiditis.

* Vol. clixiv, p. 791.

CASE 2 has also been reported in detail.* Briefly, Mr. C. J. McC., postoffice clerk, 25 years of age, in good health and of good habits, noticed, without apparent cause, a slight fogging in his left eye, which increased so that within three days his vision was 1-10; 48 hours later the right eye became similarly involved. There was no pain or discomfort in the eyes or head. Dr. William J. Daly, who referred the case, reported a marked central scotoma for white and colors, as shown in the charts. He found a blurring of the edges of both disks and an increased capillarity. Dr. Percy Brown made several x-ray plates and reported "an

obliteration of the cavity of the sphenoid at a point which is usually but half the dimension (antero-posteriorly) of the normal sphenoid." "That portion usually lying below the sella turcica was completely occluded." The examination of the nose was practically negative, excepting that on probing the sphenoids the probe entered the right a full centimeter farther than it did the left. The left sphenoid was opened; there was no pus, only a thickened mucosa. A marked deflection of the sphenoidal septum to the left was found, which accounted for the apparent shallowness. Recovery was rapid and vision was normal in three weeks, and has remained so.

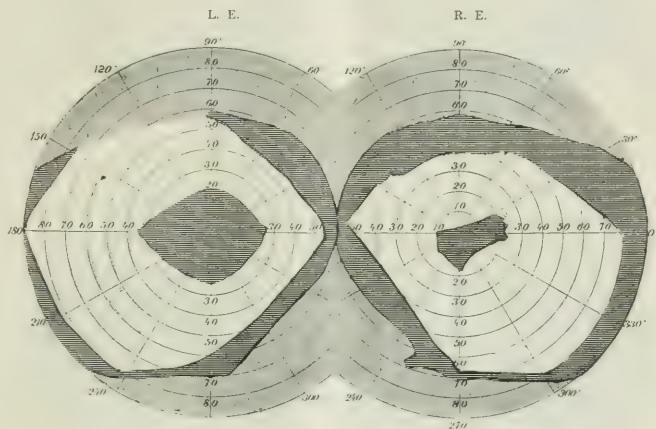


FIG. 1.—Case II. Object 1 cm.

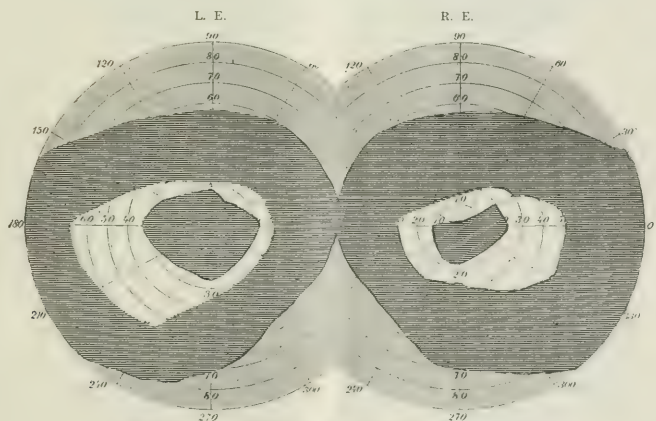


FIG. 2.—Case II. Unshaded portion shows visual field for blue.

* *Loc. cit.*

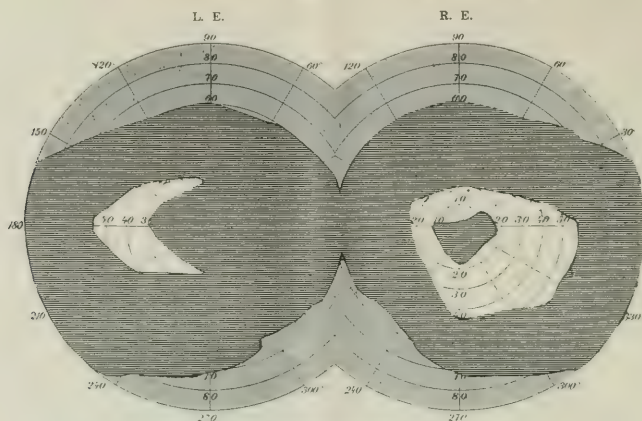


FIG. 3.—Case II. Unshaded portion shows visual field for red.

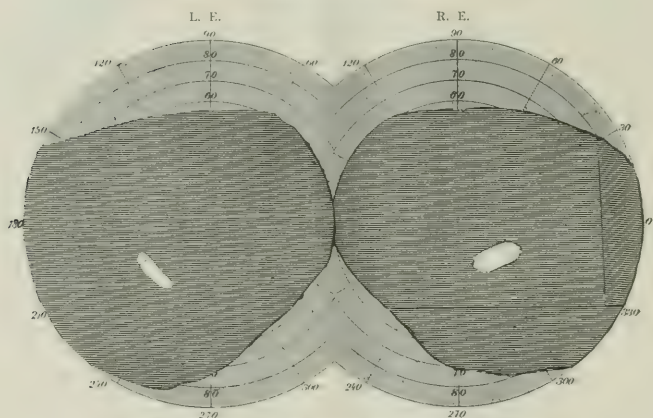


FIG. 4.—Case II. Unshaded portion shows visual field for green.

CASE 3. Miss J. L. P., age 21, student, was referred to me January 13, 1916, by Dr. F. I. Proctor, who reported loss of vision in left eye to 20-40, swelling about the left disk and enlargement of the blood vessels. She gave a history of catarrhal colds as far back as she could remember. Had tonsils and adenoids removed five years ago. Following a severe cold three years ago she noticed for the first time a blurring of the eyes which lasted two or three days. Five months ago she had a blurring which lasted a week. She further says that with bad head colds she not infrequently has some difficulty in seeing, but up to the present attack has not given it much thought as there was no pain and the eyesight was not very bad. Present attack followed the grip and was characterized by violent pain for three days. Then she noticed that there seemed to be something in left eye that needed to be removed. As wiping did no good, she consulted Dr. Proctor, thinking the trouble was due to some foreign body.

On examination of her nose there was found on the left a moderate deflection of the septum, and an enlarged and swollen middle turbinate completely blocking the superior meatus. Her right middle turbinate was swollen, but not as firmly wedged in as the left. There was a mucopurulent secretion exuding from beneath both middle turbinates; trans-illumination negative. Hot solutions were used in the nose and with the subsidence of the swelling there was a profuse discharge. The pain was relieved at once and practically disappeared within 48 hours. The next day there was some blurring of the right eye and Dr. Hawkins, who followed the case for 10 days while Dr. Proctor was away, has given me the following report:—

January 14th. "Fundi examination shows margin of each disk slightly edematous, veins and arteries somewhat tortuous. This condition most marked on nasal side, left.

Vision: right, 20-30; left, 20-40. Visual fields

show a general contraction for both objects and colors. Colors retain normal relation. Each field presents an annular scotoma from 10 to 30 degrees.

January 25th. Vision: right, 20-20, left, 20-30 minus. Fields but slightly changed except that green is entirely within the annular scotoma and the red is perceived only in one small area on outer side of field in each eye.

Case was x-rayed by Dr. Percy Brown and his report is given in full:—

"The general situation in the case of Miss P. (No. 8562) as obtained by x-rays is somewhat as follows:

The sphenoids were investigated primarily by the so-called Bowen method, which permits of the projection of x-emanation from beneath the chin downward through the vertex of the skull when the head is in an extremely hyperextended posi-

tion; in other words, with the head hanging over the edge of the examining table to the limit of extension. By this method it is possible to obtain a comparison of both sphenoidal areas in a manner impossible in any other position. The general deficiency of the left sphenoidal area in this case may be seen in comparison with the right. Anatomically, the left sphenoid is not as large as the right, especially in the antero-posterior diameter and it is, seemingly, the seat of subseptae, together with a certain degree of infiltration.

The remaining accessory sinuses of the nose in this case, as obtained through an antero-posterior plane of the skull, are not, apparently, in marked degree abnormal, with the exception that the portions of each frontal sinus closely approximating the median line present a moderate opacity which, however, suggests a mural thickening of the mucosa rather than effusive material."

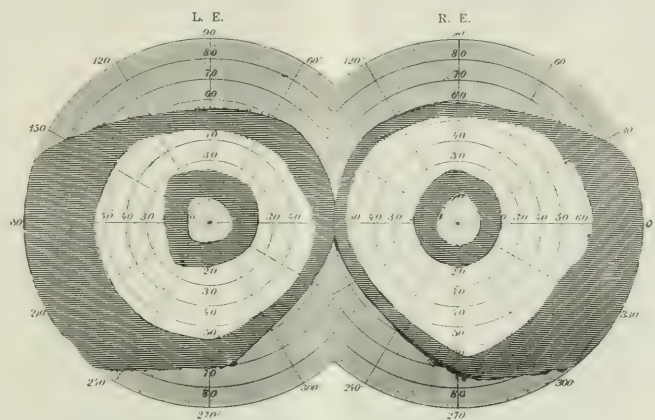


FIG. 5.—Case III. Object 5 mm.

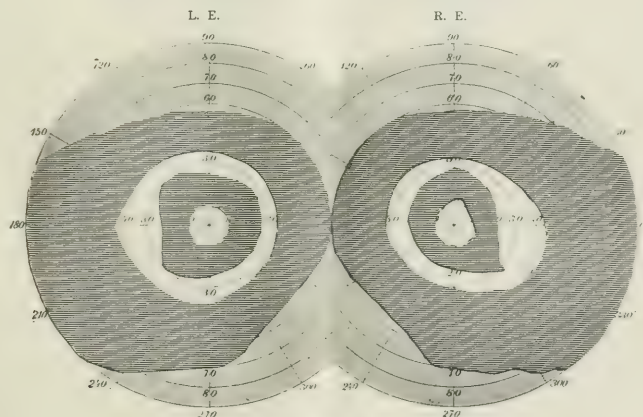


FIG. 6.—Case III. Unshaded portion shows visual field for blue.

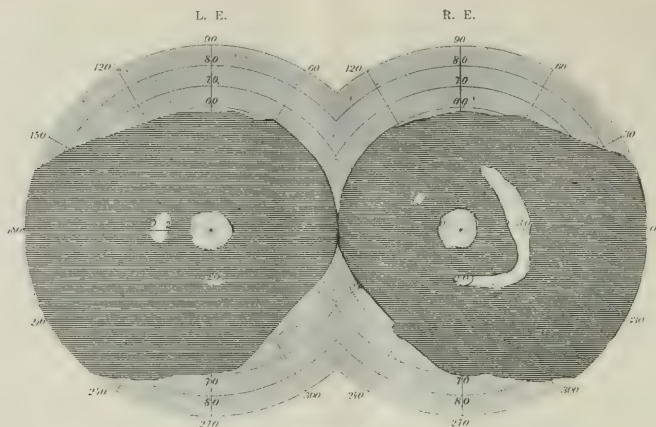


FIG. 7.—Case III. Unshaded portion shows visual field for red.

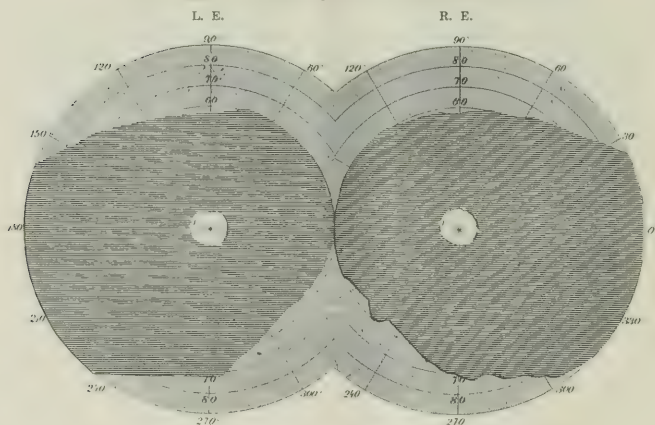


FIG. 8.—Case III. Unshaded portion shows visual field for green.

The swelling in the nose gradually lessened and the vision improved so that it was practically normal at the end of 3 weeks. The scotoma is disappearing, but is not entirely gone. The blurring has been gone for some days. This blurring symptom was interesting, as it would become pronounced with some slight blocking up of the nose, thus varying from day to day. There would also be an occasional pain when the eyes were especially blurry. This case is one that evidently needs an operation to establish better drainage from the posterior accessory sinuses. The removal of the left middle turbinate will probably suffice; if not, the sphenoid and possibly the posterior ethmoid will be opened.

The middle turbinate was removed and the patient has had no further trouble up to date, January 13, 1917.

To sum up the results in these 27 cases which were selected at random:—

There was complete recovery in 14; improvement in 7; total blindness in one or both eyes in 5; one death; 4 cases recovered without an operation; in three the sphenoid alone was opened, while the ethmoid was operated upon 10 times alone and 7 times in conjunction with the sphenoid. In 15 the onset was sudden, with a history of coryza in 12, and severe pain in 13. Pus was found in 22 cases and a thickened mucosa in 5. Scotomas and fundi changes noted in 14. X-ray finding helpful in 4.

Cases of retrobulbar neuritis can be divided into three classes:—1. The acute ones which usually follow the grip or a coryza and are accompanied by severe pain. The pressure of the secretions in the sinuses and the swelling from the inflammation in the mucosa cause constriction of the optic nerve and artery.

2. The chronic ones where there is less pain, if

any, and where an empyema of one or more sinuses is causing either a pressure on, or a toxemia of, the nerve.

3. Those cases where, on opening the sinuses only a thickened mucosa is found. Here hyperplastic changes are taking place and a periostitis in the sinuses by extension through the optic canal becomes a perineuritis.

From a study of the cases in this paper I think we may say that patients with retrobulbar neuritis demand our most careful attention. The diagnosis is made largely from the findings of the ophthalmoscope, vision and the visual fields. Radiographs may be helpful and should be taken, for even though they show no diseased sinuses, they may show some peculiar abnormality or some faulty development which might predispose to nerve involvement.

Enlargement of the blind spot is another valuable and early sign of neuritis. De Kleyn found in 52 cases of posterior accessory sinus disease enlargement 47 times, while he found the blind spot normal in his cases of frontal and antrum disease. In fact, in several cases, its presence enabled him to make a diagnosis of posterior accessory sinus disease which he verified by operation. Van der Hoeve says, "that enlargement of the blind spot for white and colors points with great probability to diseases of the posterior nasal accessory sinuses and justifies operative interference for this disease if there are no other causes for its presence."

The prognosis is, on the whole, favorable, especially where treatment is initiated before optic atrophy occurs. The success of any treatment must be based on a recognition of the pathology. The inflammatory process in the sinuses must be controlled. If pus under pressure is causing a strangulation of the nerve and artery, the pressure must be relieved, otherwise optic atrophy will follow. If the neuritis is caused by an extension of the inflammatory process or a toxemia, this condition must likewise be controlled. Each case should receive individual consideration. No one line of treatment is suitable for all. Some would get well without treatment. Other cases may clear up under appropriate general treatment, but severe cases, where there is actual danger of blindness, require the most careful and skilful treatment, both medical and surgical.

To relieve the pressure on the nerve, drainage from the posterior accessory sinuses should be established. This can be obtained in some cases by appropriate intranasal treatment. If this is unsuccessful, the middle turbinate, if obstructing, should be removed in whole or part.

In cases where there is no obstruction to the sinuses, only a thickened mucosa, the removal of the middle turbinate would not be indicated, excepting such portion as was necessary to get access to the sphenoid and posterior ethmoid.

If pressure on the nerve is not relieved within the next two or three days, as shown by an improvement in vision and the subsidence of the

pain, the front wall of the sphenoid should be removed. This is a comparatively simple and safe operation when performed by one familiar with the anatomy of the region. If relief does not soon follow, the posterior ethmoid cells should be opened.

A complete ethmoid exenteration is, I believe, rarely necessary, as the relation of the optic nerve to the anterior cells is almost unknown. The eyes should be carefully watched from day to day, and a further loss of vision should furnish the indication for the progressive operative interference. Do, by all means, what is necessary to safeguard the vision, but do not become unduly excited and inflict on a patient a needless amount of radical surgery.

BIBLIOGRAPHY.

- Berger and Tyrman: Die Krankheiten der Keilbein-Höhle und des Siebbein-Labyrinthes und ihre Beziehungen zu Erkrankungen des Seborgans, 1886.
- Holmes: "The Sphenoidal Cavity and Its Relation to the Eye," Archives of Ophthalmology, 1896.
- Schneiglow: "Relation Between Diseases of the Nose and Eye," Hospitalist, 1906.
- Knapp: "Bilateral Optic Neuritis After Ethmoiditis," Trans. Am. Ophthal. Soc., 1908.
- Knapp: "Optic Neuritis After Disease of the Posterior Ethmoid Cells," Arch. of Ophthal., Vol. xxvii, 1909.
- Sluder: "Blindness Due to Post-Ethmoidal Empyema Acutum. Report of Case," Laryngoscope, 1907.
- Wiener: "Report upon Three Interesting Cases of Sinusitis Associated with Serious Eye Complications," Am. Jour. of Surg., 1905.
- Paunz: "On Rhinogenic Optic Neuritis," Archives of Ophthal., 1909.
- Kraus: "Report of a Case of Unilateral Retrobulbar Neuritis Due to Ethmoiditis, with Restoration of Vision," Ophthalmic Record, 1909.
- Stark: "Sudden Blindness Due to Suppuration of the Accessory Nasal Sinuses," Jour. A. M. A., Vol. lxy, No. 18.
- Coppes: "Two Cases of Blindness Due to Sphenoidal Sinus Disease," Journal de Med. de Bruxelles, No. 15, 1906.
- Caldwell: "Diseases of the Pneumatic Sinuses of the Nose and Their Relations to Certain Affections of the Eye," N. Y. Med. Record, 1893.
- Halstead: "Empyema of the Right Maxillary Ethmoid and Sphenoid Sinuses with Sudden Blindness of the Left Eye; Operation; Recovery of Sight," Trans. American Laryngological, Rhinological and Otolaryngological Society, 1901.
- de Schweinitz: "Some Observations of the Ocular Manifestations of Sinus Disease," Trans. Am. Ophthal. Soc., Vol. xii, 1910.
- Posey: "The Accessory Sinuses of the Nose from an Ophthalmological Standpoint," New York Med. Jour., Vol. lxxv, 1907.
- Hajek: Affektionen der Netzhaut und des Sehnerven, Pathologie und Therapie der Entzündlichen Erkrankungen der Nebenhöhlen der Nase, 1915.
- Loeb: "A Study of the Anatomic Relations of the Optic Nerve to the Accessory Cavities of the Nose," Annals of Otolaryngology and Laryngology, 1909.
- Onodi: "Über die Okulo-orbitalen Komplikationen nasalen Ursprungs," Pest. Med. cl. Presse, 1914.
- Van der Hoeve: "Enlargement of the Blind Spot, an Early Symptom in the Diagnosis of Optic Nerve Affections, due to Diseases of the Posterior Nasal Accessory Sinuses," Archives of Ophthal., 1911.
- White: "Loss of Sight from Retrobulbar Neuritis Due to Accessory Sinus Disease, with Report of Two Cases," BOSTON MEDICAL AND SURGICAL JOURNAL, 1916.

ON CRANIAL MEASUREMENTS OF PERSONS DYING IN INSANE HOSPITALS.*

By LAWSON GENTRY LOWREY, A.M., M.D., BOSTON,

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Pathologist to Danvers State Hospital.

ONE may safely infer that a great deal of work has been done on this important topic, without very remarkable results. The first part of this inference is based upon the statements occurring in many works from 20-15 years ago, on the importance of having such work done.

* Contribution No. 65, Danvers State Hospital Papers.

Thus Peterson¹, writing primarily upon skull studies in idiocy and imbecility in which some valuable data are presented, regards his article as primarily a stimulus.

Ford Robertson² gives a résumé of the results of craniometry in the insane up to 1900, but states several times that an extensive series is necessary.

Since these dates, not a great deal has appeared having to do with the crania of the insane, which leads to the second part of the inference,—that results have not been remarkable.

The impression one obtains who works with the insane (as distinguished from the idiots and lower-grade imbeciles) is that there are no striking deviations from the general population, in skull type or conformation. Certainly asymmetries and abnormalities of various types are seen fully as frequently, and to a striking degree, in the normal as in the insane population.

Such an impression is, to a large extent, borne out by the accurate method of measurement. The series here reported is small, but probably will suffice to make the point clear. This is a random series, the only requirement being that the cases come to autopsy.

The method is very simple. It is only necessary to reflect the anterior scalp flap to a point which uncovers the fronto-nasal suture; the posterior flap to the opisthion, and to uncover each zygomatic arch. The measurements were made with a steel tape, a brass rule and a cephalometer.

The following measurements were made:

1. Horizontal circumference. Through the glabella in front and the maximum occipital point behind.

2. Vertical transverse arc. Upper posterior border of each auditory meatus, across the top of the skull.

3. Glabella-occipital length. Greatest length from glabella to maximum occipital point, usually above the inion.

4. Maximum transverse width. In the parieto-squamous region.

5. Inter-zygomatic breadth. Between the widest points of zygomatic arches (outer surfaces).

6. Total longitudinal arc. Glabella to opisthion in midline.

Frontal: glabella to bregma.
Parietal: bregma to lambda.
Occipital: lambda to opisthion.

7. Mento-nasal, mento-glabbellar, mento-bregmatic, mento-occipital, mento-inion, mento-parietal. These really require that all teeth be pres-

TABLE I.

(CRANIAL MEASUREMENTS.

AVERAGE (MINIMUM AND MAXIMUM) MEASUREMENTS.

	SYNPHYSIS 20 m.	1 f.	7 m.	TOXIC 1 f.	2 m.	ORGANIC 3 f.	8 m.	SENILE 10 f.	3 m. MANG DEPRESSIVE 7 f.	4 m. DEMENTAL PUECOX 7 f.	AVERAGE ENTIRE GROUP 44 m. 29 f.
Hor. circ.	598.0 (499.0—550.0)	531.0 (515.0—540.0)	531.0 (515.0—540.0)	520.0 (480.0—558.0)	513.0 (495.0—530.0)	521.0 (485.0—546.0)	522.0 (480.0—558.0)	522.0 (480.0—558.0)	521.0 (485.0—546.0)	522.0 (480.0—558.0)	522.0 (480.0—558.0)
V. T. A.	336.0 (290.0—375.0)	352.0 (330.0—365.0)	352.0 (330.0—365.0)	354.0 (310.0—390.0)	352.0 (305.0—350.0)	358.0 (315.0—392.0)	358.0 (315.0—392.0)	358.0 (315.0—392.0)	358.0 (315.0—392.0)	358.0 (315.0—392.0)	358.0 (315.0—392.0)
T. L. A.	385.0 (325.0—400.0)	361.0 (330.0—400.0)	361.0 (330.0—400.0)	353.0 (330.0—375.0)	364.0 (335.0—400.0)	359.0 (330.0—380.0)	361.0 (325.0—375.0)	361.0 (325.0—375.0)	359.0 (330.0—380.0)	361.0 (325.0—375.0)	361.0 (325.0—375.0)
Fr.	31.3% (27.8—36.1)	31.9% (27.0—35.0)	31.9% (27.0—35.0)	33.9% (28.7—40.0)	31.3% (28.7—33.0)	31.8% (28.9—35.8)	31.7% (27.0—40.0)	31.7% (27.0—40.0)	31.8% (28.9—35.8)	31.7% (27.0—40.0)	31.7% (27.0—40.0)
Par.	34.2 (23.5—46.2)	35.0 (27.8—36.1)	35.0 (27.8—36.1)	34.5 (26.7—40.0)	34.2 (25.0—41.8)	36.1 (28.8—40.0)	35.0 (27.5—46.2)	35.0 (27.5—46.2)	36.1 (28.8—40.0)	35.0 (27.5—46.2)	35.0 (27.5—46.2)
Occ.	182.0 (170.0—201.0)	189.0 (185.0—196.0)	189.0 (185.0—196.0)	182.0 (171.0—191.0)	177.0 (173.0—181.0)	181.0 (173.0—193.0)	182.0 (171.0—191.0)	181.0 (173.0—181.0)	181.0 (171.0—192.0)	182.0 (173.0—181.0)	182.0 (171.0—192.0)
G. O. L.	146.0 (132.0—147.0)	141.0 (133.0—148.0)	141.0 (133.0—148.0)	141.0 (130.0—155.0)	142.0 (135.0—154.0)	142.0 (137.0—151.0)	140.0 (125.0—143.0)	140.0 (125.0—143.0)	142.0 (137.0—151.0)	140.0 (125.0—143.0)	140.0 (125.0—143.0)
Max. br.	128.0	131.0	131.0	125.0	122.0	125.0	126.0	125.0	126.0	126.0	127.0
M. g. br.	12.0 (2.0—27.0)	10.0 (—7 + 21)	10.0 (—7 + 21)	15.0 (3.0—24.0)	16.0 (9.0—38.0)	16.0 (8.0—22.0)	13.0 (—7.0 + 38.0)	13.0 (—7.0 + 38.0)	16.0 (8.0—22.0)	13.0 (—7.0 + 38.0)	13.0 (—7.0 + 38.0)
M. g. br.	86.0 (54.0—106.0)	92.0 (83.0—98.0)	92.0 (83.0—98.0)	91.0 (73.0—133.0)	85.0 (74.0—95.0)	85.0 (75.0—95.0)	92.0 (54.0—133.0)	92.0 (54.0—133.0)	89.0 (75.0—95.0)	92.0 (54.0—133.0)	92.0 (54.0—133.0)

* Maximum breadth less zygomatic breadth.

ent. Since this was rarely true, the majority of these measurements cannot be used, and I have selected only the difference between the mento-glabellar and mento-bregmatic to present in this paper.

8. Certain others; minimum frontal, interstephanic and biasterianic were at first made, but later dropped.

A careful perusal of Peterson's and Robertson's works is recommended to anyone desiring to carry on such investigations.

1, 2 and 5 are done with the tape. 2, 3, 6 and 7 with the cephalometer.

THE DATA.

The data are presented according to psychiatric groups, in the form of averages, together with minimum and maximum in each group. The sexes are averaged together, since the numbers are otherwise entirely too small. It is, of course, true that the number of cases is too small for sweeping conclusions, but the general impression of approximate normality seems to be substantiated.

It seems unnecessary to comment on the table because in practically all cases the measurements are within physiological ranges. Strikingly few micro-cephalic or macro-cephalic cases were seen in this series.

TABLE II.
CEPHALIC INDEX.

	DOLICHO- CEPHALIC	MESO- CEPHALIC	BRACHY- CEPHALIC
Syphilis	11	6	4
Senile	3	10	5
Toxic	4	4	
Organic	2	3	
Manic Depressive..		6	4
Dementia Praecox	1	6	4
TOTAL	21	35	17

The normal population probably shows a tendency towards dolichocephalism, which is the case in this general group also. It may be noted, however, that in the manic-depressive group of 10 cases the tendency is toward brachycephalism. In the particular groups here reported the manic-depressive cases tend to be short-headed as compared with dementia-praecox cases, but the range is by no means so great.

As stated before, the number of cases is too small to allow sweeping conclusions to be drawn, and the possibility of variations in the measurements is very great, so that further elaboration of the data here presented seems unnecessary. They seem to me, however, to verify the general conclusion derived by observation, that at least in the majority of cases of insanity the cranial measurements and cranial types are approximately those of the normal population.

REFERENCES.

- ¹Peterson, F.: Craniometry and Cephalometry in Relation to Idiocy and Imbecility. American Journal of Insanity, Vol. lii, p. 73.
- ²Robertson, Ford: The Pathology of Mental Diseases. 1900.

Clinical Department.

TWO CASES OF LEIOMYOSARCOMA.*

By C. H. HARE, M.D., BOSTON.

Miss F., No. 2928, was first seen October 12, 1913. Age fifty-four. Never pregnant. Menstruation began at fifteen and ended at forty-six without any trouble. The amount of flow was always normal, and did not increase with tumor or at menopause. Dysmenorrhea was always severe, though less the last year of menstrual life. There was never any inter-menstrual bleeding. Leucorrhœa was always troublesome until it ended with the menopause. Her first pelvic examination was made when she was about forty-four, because of her leucorrhœa, and she was then told that she had a fibroid, though she did not recognize any tumor herself until about eighteen months before my operation, when she went to another physician for pelvic examination, at that time having sacral ache and leg cramps, especially at night. Growth of tumor then became marked. When first seen by me size was burdensome, though pains were not very bad. She weighed 166 and had been losing weight a short time. Urination was four or five times daily and three at night. No dysuria. No incontinence. Desire urgent. Insomnia had troubled her for twenty years. Appetite and digestion fair. Bowels regular. No edema. Not nervous. No flashes.

A subtotal hysterectomy, leaving a small piece of cervix, was done by the writer ten days after first seen. Heart, lungs and kidneys normal. A fourteen ounce wandering tumor, rolled up in the omentum, was removed from the right pelvis, where there were many adhesions but no pedicle. A ten-pound irregular tumor was removed from the left broad ligament, where it was two-thirds under the peritoneum. The sigmoid was stretched tightly over the tumor some six or eight inches above its usual location. Eight or ten inches of ureter were peeled off the under surface of tumor, and it was lying firmly upon the large blood vessels. Fundus uteri was atrophied and contained a few pea and olive-size interstitial fibroids. Right tube and ovary normal. Left tube twelve inches long by stretching over tumor with fimbriated end open. Left ovary not recognized. There were general pelvic adhesions and large bands five or six inches long. A small chronic appendix was removed. The operation was well borne and convalescence normal. The pathological report was: multiple uterine myomata, one calcified; but this was later changed to: malignant leiomyoma, on investigation and examination by Dr. Gardner.

After leaving the Hospital, she was next seen May 24, 1914, for a small tumor just to left of spine in the lumbar region, noted a few days previously. She weighed 170 and felt fine, except some pain from spine to sternum. Six days later under cocaine, the above large olive-size encapsulated tumor was removed. Fibroma was the pathological report on this.

The writer did not see her again or have any further care of her, but she wrote me some months later that medicine and vacation had failed to relieve her "intercostal neuralgia." Dr. W. J. Mixer will continue her story and further operations.

* Read Oct. 24, 1916, before Obstetrical Society of Boston. Extensive pathological report on first case has been published in American Journal Medical Research by Dr. Gardner.

Another malignant leio-myoma was operated by the writer last February, No. 4100. Age, fifty-five. Married fifteen years. Never pregnant. Menstruation began at fourteen and was always normal, until it ended at fifty-two without incident, though flashes, dizziness and general discomforts had existed for ten years. Pelvic ache and darts for a few weeks. Weight 164, though she had lost 16 pounds in six or eight months. Pelvic examination was made before married at forty, with reference to the safety of pregnancy, and she was then told that she had a small tumor, but she was never conscious of it and had no trouble from it, to her knowledge. Her next vaginal examination was made by her family physician three days before operation. He was called because her extreme constipation of twenty years had reached the point where it seemed that obstruction had begun.

On opening the abdomen, a pint or more of bloody fluid escaped. The pelvis was full of fibroids, and there were nodules from olive to egg size throughout the abdomen. There were no pelvic adhesions of account though they were abundant above the brim, and there were several acutely angled coils of intestine freed. The case was evidently hopeless, yet it seemed advisable, as not difficult, to remove the pelvic tumors, so a subtotal hysterectomy was done, leaving the cervix. Three pounds were thus removed. Ovaries were atrophied. Appendix not sought. Gall-bladder full and tense, but no stones felt. She bore the operation well and continued to do well, with temperature never over 99 or pulse over 115 and fair results from enema, until distention began the second afternoon following operation, which was followed a few hours later by sudden cyanosis and collapse, with death three hours later, or fifty-four hours after operation. The pathological report was: multiple uterine myomata, some calcified; malignant leio-myomata; sclerotic ovaries.

Book Reviews.

The After-Treatment of Operations. A Manual for Practitioners and House Surgeons. By P. LOCKHART-MUMMERY, F.R.C.S. (Eng.), B.A., M.B., B.C. (Cantab.); Senior Surgeon, St. Mark's Hospital for Cancer, Fistula and Other Diseases of the Rectum; The Queen's Hospital for Children, London; and Honorary Surgeon to King Edward VIIth's Hospital for Officers; Special Consulting Surgeon to City of London Military Hospital, and Falham Military Hospital; Jacksonian Prize-man, and Late Hunterian Professor, Royal College of Surgeons. Fourth edition. New York: William Wood and Company. 1916.

In the fourth edition of P. Lockhart-Mummery's manual, he has entirely rewritten the chapter on Surgical Shock and has added one upon the treatment of Gunshot Wounds.

In general, the author describes fully the after-treatment of the more common surgical operations only, giving as his reason that "these are the cases in which the after-treatment is most likely to be left to the general practitioner or house surgeon." The book is limited strictly to the title.

This small volume of 250 pages is undoubtedly very good indeed; so good that it raises the question in the reviewer's mind as to the advisability of larger volumes and systems upon the subject of after-treatment.

On Modern Methods of Treating Fractures.

By ERNEST W. HEY GROVES, M.S., M.D., B.Sc., (Lond.), F.R.C.S. (Eng.); Surgeon to the Bristol General Hospital; Consulting Surgeon to the Cossham Hospital; Late Hunterian Professor of the Royal College of Surgeons of England; Major R.A.M.C. in charge of the Surgical Division of the 21st General Hospital, British Expeditionary Force. New York: William Wood and Company. 1916.

It seems to be true that the prefaces of books are well worth reading; there are, of course, exceptions, but not many. Prefaces vary from very good to very bad; yet even the bad ones are not long—and a considerable experience would suggest that as the prefaces are, so are the texts which follow them. If this theory is sound, the reading of a poor preface becomes its own reward, since it enables us to avoid the still more distasteful task of reading a poor book. And reading an interesting preface invites us to a longer enjoyment of the goods that the author has in store for us. Mr. Groves' preface is so brief and yet so comprehensive, that we quote it almost *in toto*:

"The following small book is the outcome of several years of close experimental and clinical study of the problems of fracture treatment. It embodies the work I did on fractures in animals with the assistance of grants which were made to me by the Science Committee of the British Medical Association, and the Hunterian Lecture which I delivered in 1914. But in the present volume I have also endeavoured to examine critically the various methods of fracture treatment which are of practical importance to the modern surgeon, and to indicate the conditions in which one or another ought to be employed. My principal aims have been two. First, to show that the various methods of treatment should all be brought into our service as occasion requires, instead of being regarded as independent, rival, or mutually destructive systems. And, secondly, to emphasize the necessity for mechanical accuracy and efficiency in dealing with what after all is largely a mechanical problem."

And his book from title to index is unquestionably one of the most interesting and valuable of the many surgical books which have appeared in 1916. Into 200 pages he has had condensed what he wishes to say—though the foundation on which this rests includes not only hard study, wide reading, varied experience, unusual opportunities, but also real experimentation in ample quantity, carefully recorded, studied and reported. From all of this he has made that most difficult of all things,—a thoroughly satisfactory primer or textbook upon a definite surgical subject. It is so much easier, and so much the fashion nowadays, to write “systems” and many tomes on very small sections of surgery.

Mr. Groves has divided his book into nine chapters: in the first, he considers “Myths of Yesterday and Problems of Today;” he surveys and condemns many of the details of the classical treatment of fractures; discusses form (or as we should say, position) as determined by x-ray, with relation to ultimate function; considers the modern problem, and the modern methods of solving the problem.

Two very important chapters follow—one on Massage and Mobilization; the other (No. III) on Extension by Adhesive Appliances. These chapters are unusually good; and put both subjects in new and important lights, and place them in an all too unfamiliar position to many who treat fractures at present.

Mr. Groves next discusses Mechanical Methods of Extension and the Operative Treatment. The mechanical methods are nail extension (Codivilla; Steinmann) and the author’s modification; Operative Treatment includes 100 cases of Animal Experimentation; the Treatment of Usual Fractures; of special cases; of Open Fractures, and a final chapter on Non-union.

It is to be hoped that every one who treats fractures may read this book carefully; too much praise is difficult to give it: one may differ with the author, as for instance in fracture of the patella, but not often—nor fundamentally. He has torn away many bad traditions and has put in a brilliant position the best of recent thought, with a refreshingly moderate emphasis upon the operative treatment.

The Breast: Its Anomalies, Its Diseases, and Their Treatment. By JOHN B. DEEVER, M.D., LL.D., Sc.D., Professor of the Practice of Surgery, University of Pennsylvania; Surgeon-in-Chief to the German Hospital; Visiting Surgeon to the Hospital of the University of Pennsylvania; Consulting Surgeon to the Germantown Hospital, the Philadelphia General Hospital, Saint Agnes Hospital, and Mount Sinai Hospital, Philadelphia, Pennsylv-

vania; and JOSEPH McFARLAND, M.D., Sc.D., Professor of Pathology and Bacteriology in the Medical Department of the University of Pennsylvania; Pathologist to the Philadelphia General Hospital; Fellow of the College of Physicians, Philadelphia. Assisted by J. LEON HERMAN, B.S., M.D., Assistant Surgeon to the Methodist Hospital of Philadelphia; Instructor in Anatomy, Medical School of the University of Pennsylvania. With 8 colored plates and 277 illustrations in text. Philadelphia: P. Blakiston’s Son and Company, 1917.

Deaver’s book is large, generous and complete. An exceptionally busy surgeon has had the patience and taken the time to produce and publish an exhaustive treatise upon all the surgical maladies that the breast is heir to! He has associated with himself an able pathologist, and an active young surgeon. The result is a book with which every good surgeon must make himself familiar.

In the brief preface the author tells us they “have been moved by two prime considerations: first, the importance of collecting individual experience in order that deductions and generalizations may follow, and, second, the dissemination of known facts of vital importance in the treatment of the malignant diseases of the breast.” Deaver himself modestly disclaims a “highwater mark of cure in malignant disease”; he lauds his co-workers heartily, and says that without them the volume would never have appeared; and acknowledges with gratitude the assistance obtained from many others.

In spite of this, for the surgeon this is “John B. Deaver, his book.” It reflects his directness and incisiveness of speech and action. He quotes freely, but qualifies only a little; he has put into 700 pages a very great amount of information, and brings us down to the latest advances in the subject, as, of course, one would expect.

In his 12 chapters Dr. Deaver considers successively the evolution of the breast, and its surgical anatomy; its anomalies, congenital and acquired; its trauma and its infection.

Chapters VII to X, inclusive, treat of cysts, general pathology, all breast tumors, and the operative treatment, which is considered *in extenso*. The final two chapters concern non-operative treatment and diseases of the areola.

Particularly to be praised is the adequate section upon operation, freely illustrated, and using the original descriptions of the various authors, whose operations are described; this covers, as it should, almost 100 pages.

The reviewer may end as he began; it is a generous, complete and admirable volume, and should be the companion of every surgeon.

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MINERS' CONSUMPTION.

A RECENT investigation of the causes and prevalence of miners' consumption among the metal miners in southwestern Missouri forms the subject of Public Health Bulletin No. 85, issued by the U. S. Public Health Service.

Miners' consumption consists essentially of a mechanical injury to the lungs due to the prolonged inhalation of hard rock dust. It has been recognized as being prevalent in some American mining districts, particularly in the Joplin zinc and lead districts. It was to determine its actual prevalence, and its relationship to pulmonary tuberculosis, that the investigation was undertaken.

In the Poplin district certain mines are known as "sheet-ground" mines, in which the ore is found imbedded in an exceedingly hard flint.

In drilling and other mining operations this flint rock is finely pulverized. The minute rock dust particles enter the lungs, in the process of natural breathing, and by their irritating action cause the formation of fibrous, or scar-like

tissue. The effect of this is to lessen the lungs' ability to expand and contract, with the result that the victim first notices that he is becoming short winded. With continued exposure to this silica-containing dust, the difficulty of breathing increases, until the miner is no longer able to perform active physical labor. It was found also that men with dust-injured lungs were especially liable to develop tuberculosis, the dust irritation lessening the ordinary resisting powers of the lungs. While miners' consumption is not in itself infectious or contagious, it predisposes to tuberculosis. The greater the amount of rock dust injury the greater the liability to tuberculosis; the far-advanced cases of miners' consumption practically all become tuberculous before their death.

Under an entirely voluntary system 720 miners presented themselves for physical examination, of whom 433 were found to have had their lungs injured by the inhalation of rock dust; of these 103 were also tuberculous, the amount of tuberculosis infection being greatest among the advanced cases of the rock dust disease.

Five years' steady work with exposure to flint dust is fairly certain to find the miner in at least the first stages of miners' consumption. If the miner continues his work after being affected, death usually results within ten years from the time that exposure to flint dust commenced. Poor housing conditions were found to be prevalent and to add to the liability of tuberculous infection. Apparently tuberculosis is now occurring at an earlier stage of miners' consumption than was formerly the case. The report lays emphasis on the necessity of preventing the spread of tuberculosis through these cases, especially among miners' children. The fact that miners' consumption is a forerunner of tuberculosis necessitates that it be treated with the same hygienic precautions as is the latter disease.

The report concludes that aside from the hygienic supervision of underground working places, the education of the miner against the spread of infection and supervision of miners' children, especially those of consumptive parents, are matters of vital importance.

TETANUS IN WAR AND PEACE.

In the early period of the European War, many cases of lockjaw or tetanus developed in

the wounded of the Allied armies. This very fatal disease is caused by a bacillus which is often found in garden soil, street dust, and in the earth in the vicinity of stables. In order to cause tetanus, the germ must lodge in a wound and find suitable conditions for its growth. Injuries in which clothing or foreign matter is forced widely or deeply into the tissues are the most dangerous because the tetanus germ can flourish only in places into which the oxygen cannot penetrate, just as toadstools grow best when sheltered from the sun.

As soon as the stress of war conditions permitted, all badly wounded men were immediately given injections of the serum against tetanus as a routine procedure to prevent this dreaded disease. The use of the anti-toxin caused a prompt reduction in the number of cases, and the control of tetanus in the armies can be justly cited as one of the ways in which science is helping valor to win the war.

This subject is of especial interest at the present season because Fourth-of-July injuries, especially from blank cartridges, are apt to be followed by lockjaw if they are not promptly and properly treated. The general adoption of the "Sane Fourth" has done much to reduce the number of these accidents and suitable medical attention has prevented the development of tetanus in almost every instance.

In view of the serious results which may occur, it seems wise again to warn all parents that wounds from toy pistols, firecrackers, and firearms are always dangerous, and all persons hurt in this way, even though the injury appears trivial, should be taken at once to a competent physician for treatment, especially to ascertain if the serum should be injected.

MEDICAL NOTES.

NATIONAL SOCIETY MEETINGS.—The American Laryngological, Rhinological and Otolological Society held its twenty-third annual convention in Atlantic City, N. J. Dr. G. L. Richards of Fall River, Mass., was elected president for the coming year. Other officers chosen included Dr. W. H. Haskins, New York, secretary; and Dr. Ewing Day, Pittsburgh, treasurer. The three new members of the executive council are Dr. F. J. Harris, New York; Dr. F. P. Emerson, Boston, and Dr. L. W. Deen, Iowa City.

Speakers at the final session declared that virtually every member of the society had pledged his services to the nation.

The American Climatological and Clinical Association, holding its thirty-fourth annual meeting at Lakewood, N. J., on May 29, 30 and 31, elected as its president Captain J. H. Elliott, of Toronto, Canada; Dr. H. M. Bracken of St. Paul, Minn., and Dr. W. G. Schaffler of Lakewood, N. J., as vice-presidents; and Dr. Guy Hinsdale, of Hot Springs, Va., secretary and treasurer.

Papers were read by Dr. John B. Hawes 2nd, and Dr. Joseph H. Pratt of Boston on "Compromising with Consumptives" and "Diseases of the Heart and Aorta," respectively.

The American Medical Editors' Association, whose forty-eighth annual meeting was held in New York on June 4 and 5, was addressed by Dr. Baketel of New York on "The Relation of Medical Journalism to Military Preparedness."

The American Medical Association held its sixty-eighth annual meeting in New York City on June 4, 5 and 6.

The House of Delegates met on Monday, June 4, with Surgeon General Rupert Blue, president of the Association, in the chair. The general meeting, which constituted the opening exercises of the Scientific Assembly, was held at 8.15 p. m., on Tuesday, June 5. The various sections of the Scientific Assembly met Wednesday, June 6, at 9 a. m., and subsequently according to their respective programs.

On Monday and Tuesday, the visiting physicians and surgeons were given an opportunity to study New York as a medical center. For this part of the meeting a local committee of arrangements, of which Dr. Wendell Phillips was chairman, had been at work for the past six months perfecting details. The result was a printed program of sixty pages embracing clinics, demonstrations and visits at 175 hospitals and dispensaries, tours of inspection to the health department, quarantine station, Ellis Island and a host of other points of interest to physicians.

At the Engineering Societies' Building throughout the meeting, moving picture exhibitions were given. Especially interesting were moving pictures of surgical operations, performed by noted surgeons, pictures showing the life history of flies and of mosquitoes, and pictures showing the work of the Red Cross.

Taking advantage of the presence in this city of a large number of hospital superintendents and others versed in hospital affairs, a meeting was held under the chairmanship of Dr. S. S. Goldwater, to discuss the planning and financing of municipal hospitals.

A special section of the program was set aside for the work of women physicians.

HOME HOSPITAL METHOD IN TUBERCULOSIS.—The New York Association for Improving the Condition of the Poor has issued reports of its home hospital for the treatment of tuberculosis which has now been in operation for five years. The home hospital method of dealing with tuberculosis with the family as a unit began in March, 1912. Families admitted to the hospital are those in which one or both parents have tuberculosis and in which there are young children predisposed to or already infected with the disease. Preference is given to families in which there is a reasonably good social record and in which the disease of the adult member offers a fair prospect of improvement.

While each family is allowed to live, so far as possible, a normal home life, everything that relates to the patient and the welfare of the families receives the most careful supervision. In addition to the medical and nursing care provided, each family receives instruction in the principles of prophylaxis and home hygiene. The patient in particular is taught so to live that he will not be a menace to his family, while the mother is carefully instructed in the care of her home and children and in the principles of household economy.

Upon admission to the hospital all members are given a complete physical examination and the family assigned to an apartment suited to their needs and provided with necessary home furnishings, clothing and toilet articles. When the wage-earner is the patient the entire expense of the family is provided by the hospital. When the mother is the afflicted one the wages of the father are supplemented by the institution so that in every case the family is well cared for and freedom from worry is thus secured. The adult patient is provided with a separate bedroom and, although the family unit is preserved, leads practically an isolated existence from the other members of his household. In clement weather, bed cases sleep out on the open-air balconies. Later, when ambulatory, they spend their days in reclining-chairs on a portion of the roof reserved for patients only. With a return to health, graded work is provided; later an attempt is made to secure full time work in suitable occupations. In the case of a mother patient, visiting housewives and helpers relieve her of the care of the home and children. For such cases the hospital diet kitchen has solved the problem of cooking.

With restored health household duties are gradually resumed. Infants spend the day in the open air nursery on the roof; older children attend the open air kindergarten or open air school. Thus in the midst of their families are provided for these patients the essentials in the cure of tuberculosis: viz., rest, fresh air, good food, freedom from worry and careful medical instruction and supervision.

The standardized dietetic-hygienic treatment employed in other sanatoria has been followed

at the Home Hospital. This has been supplemented in suitable cases by the administration of tuberculin and artificial pneumothorax. Much corrective work is done, especially dental and naso-pharyngeal.

From March 18, 1912, to October 1, 1916, the Home Hospital has cared for 153 families, comprising 765 individuals, among whom there were 177 adult and 142 children patients and 253 children suspects. The average number in each family has been 3.3 units, or 5.2 individuals, of whom 3.73 have been patients or suspects. The total days treatment to all the individuals cared for at the hospital has been 262,260; the total days treatment to patients 194,898. The average days treatment of the families discharged has been 406 days. Ninety-two families have been discharged; 22 families have been dismissed; 39 families were under care October 1, 1916. The general policy of the hospital is to care for the families for a period of from 9 to 12 months, but in many instances the wretched condition of the children has rendered it advisable to retain the family a somewhat longer period. Moreover, unlike the practice in sanatorium treatment where the patient is discharged as soon as his condition warrants, at the Home Hospital families are retained for a period of observation after the wage-earner patient returns to work. Meanwhile the education of the family in prophylaxis and home hygiene has been attempted. After discharge the families are moved into decent tenements, kept under observation of a visiting nurse and report to the hospital at stated intervals for examination and advice.

MEETING OF AMERICAN SURGICAL ASSOCIATION.—The annual meeting of the American Surgical Association, held at the Harvard Medical School on May 31, June 1 and 2, was not as well attended as usual because of the absence of many of its members on war service. Papers of particular interest were read by Drs. Joseph Bloodgood of Baltimore, Henry B. Delatour of Brooklyn and John A. Hartwell of New York city, Albert J. Ochsner of Chicago, William J. Mayo of Rochester, Minn., Stanley Stillman of San Francisco, John E. Summers of Omaha and Arthur D. Bevan of Chicago.

Other papers which reflect the war crisis will be that of Dr. Charles L. Gibson of New York city on "The Carrel Method of Treating Wounds," and that of Dr. Malcolm L. Harris of Chicago on "Regional Anesthesia."

AMERICAN SCHOOL HYGIENE ASSOCIATION.—The tenth congress of the American School Hygiene Association was held in Albany, N. Y., on June 7, 8 and 9. On the opening morning, after an address by the President, Linneaus N. Hines, the session on School Nursing was held. The afternoon was given over to a symposium on Defects of Hearing and Speech, and the evening to papers on the general topic

of the Nutrition of the School Child. The topic for morning session of the next day was "School Medical Inspection," for the afternoon "Physical Training" and for the evening "Communicable Diseases among School Children." On the last morning there was a general session with addresses on varying topics.

BETTER SANITATION NEEDED IN RURAL SCHOOLS.—In the interests of efficiency and health there is increasing necessity for the application of scientific medical and sanitary knowledge to the administration of the public schools, in the opinion of the Public Health Service.

In general, the faults observed in rural schools, the annual report of the Service declares, are due to a lack of skilled advice, especially in regard to the location, construction and equipment of school buildings, and disregard of sanitary principles governing water supplies, the disposal of sewage, ventilation, temperature, illumination, and the arrangement of school desks and blackboards. During the past fiscal year surveys have been made in rural districts of several states, and many thousand school children have been examined. These examinations have included thorough testing of the eyes by competent oculists, tests of mental capacity, and the effect of sanitary environment on school progress, as well as inspections for the customary physical defects.

The conclusion is reached that there is great need for improvement in rural schools and that communities themselves will benefit if conditions are bettered, the schools serving as object lessons for surrounding sections. Conditions in country districts have been found below those in the cities and it is apparent that organized health work has largely been confined to the latter. Considered from a sanitary standpoint alone, the Public Health Service is in favor of the consolidation of rural schools, since it must eventually result in the providing of better buildings and the organization of systems of efficient sanitary inspections.

OFFICERS OF AMERICAN MEDICAL ASSOCIATION.—In addition to the election of Dr. Arthur Dean Bevan as president, the American Medical Association elected officers for 1918-1919 as follows:

First vice-president, Dr. Edward H. Bradford of Boston; second vice-president, Dr. John McMillan of the United States Public Health Service; third vice-president, Dr. Lawrence Litchfield of Pittsburgh; fourth vice-president, Major Holman Taylor, U. S. A., Fort Worth, Texas; secretary, Dr. Alexander A. Craig of Philadelphia; treasurer, Dr. W. A. Pusey of Chicago; chairman of the House of Delegates, Dr. Hubert Work of Pueblo, Col.

On motion of Dr. Frank Billings of Chicago, a committee of five was appointed to confer with Surgeons-General Blue, Gorgas and Brais-

ted for the purpose of formulating plans to be submitted to President Wilson which would confer greater powers on army and navy surgeons in the building of military training camps and their equipment.

WAR NOTES.

DUBLIN WAR HOSPITAL.—There has been organized in Dublin a war hospital unit for service at the front in France. This unit was received by the King at Windsor prior to its departure for France on May 4.

"In order to secure the services of more medical men the War Office is now prepared, it appears, to allow doctors to give their services, as members of hospital staffs, for periods of three or six months in France. Commissions will be granted for those periods, and rank, without pay, will be retained for three months after returning, in order to save regazetting should the officer go to France again in a short time. The restriction that all officers are to be over 40 years of age, and only to exceed 50 by a small margin, has in the latter case caused much disappointment, as it prevented the inclusion in the hospital staff of several well-known Dublin surgeons and physicians who had volunteered their services. All the clinical hospitals in Dublin will be represented by those who are going out, and every group of nine, who will usually serve for three months at a time, will consist of two physicians, three surgeons, an oculist, a pathologist, a radiographer, and an anaesthetist. The chief physician and the chief surgeon in each group will be given the rank of lieutenant-colonel, the other physicians and surgeons that of major, and the specialists that of captain. The response for the staffing of the hospital has been most ready, and the full number of doctors for the year has been already provided. The next staff will be almost entirely supplied by the Mater, St. Vincent's and Jervis Street Hospitals."

RELIEF WORK OF THE CITY COUNCIL.—The Boston City Council has voted an appropriation of \$8000 to equip the Red Cross unit of the Boston City Hospital, soon to go abroad, and \$100,000 for the Soldiers' Relief Department. The sum asked for the soldiers' relief is for the payment of war claims. The State will reimburse the city for the entire amount.

ARRIVAL OF RED CROSS UNITS IN ENGLAND.—The arrival of two more Red Cross units in England from this country is announced. The units were from Philadelphia and St. Louis, Mo. These, with the Chicago unit, have been royally entertained by English, Canadians and Americans in London. Social festivities and sight-seeing trips have been arranged and no pains spared to express cordiality and appreciation to the nurses and physicians who have offered themselves for foreign service. The Archbishop

of Canterbury invited the units to tea at Lambeth palace. Visits to the Tower of London, the Parliament buildings and other places of historic interest have formed a part of the elaborate welcome prepared in their honor.

RECRUITING OF MEDICAL RESERVE CORPS.—At a meeting held in New York on May 28th for the purpose of stimulating recruiting in the Medical Reserve Corps, one hundred seventy-four physicians signed applications for commissions in the corps. Colonel T. H. Goodwin of the British Army, Maj. Roger T. Noble, U.S.A., and Colonel Theodore Roosevelt addressed the meeting. In Baltimore, Md., Dr. Joseph Colt Bloodgood, who has been active in recruiting in that city for the medical corps, stated that he believed it the inescapable duty of every member of the profession under the age of fifty-five years to volunteer his services to the Government and urged medical men to report at once to their state committee and thereby spare the surgeon-general much detail work. The following New Englanders have received their appointments to the Officers' Reserve Corps:

George F. Fiske, captain, medical, Manchester, N. H.; Harold W. Dana, first lieutenant, medical, Brookline, Mass.; Henry L. Stickney, first lieutenant, medical, Manchester, N. H.; Roland H. Behrman, first lieutenant, medical, Roslindale, Mass.; George H. Burke, first lieutenant, medical, Springfield, Mass.; James Faulkner, first lieutenant, medical, New Britain, Conn.; Raymond Parker, first lieutenant, medical, Winthrop, Mass.; Harrison Robinson, first lieutenant, medical, Bangor, Me.; Harry L. Frost, first lieutenant, medical, Hinesbury, Vt.; Harrison Parker, first lieutenant, dental, Boston, Mass.

PARIS RED CROSS HOSPITAL.—The Red Cross Hospital of Paris, organized by Dr. Joseph A. Blake, its surgeon-in-chief, and supported by the American Red Cross, was formally opened on May 31. President Poincaré, in bestowing the Legion of Honor upon Dr. Blake, said, "France bestows this in recognition of your science, your devotion and your creative work given for her." The ceremony was attended by notable Americans in Paris, including Ambassador William G. Sharp, and Robert W. Bliss, counselor to the American Embassy. The Hospital has three hundred eighty beds and is admirably equipped.

MEDICAL DEPARTMENT UNDER GENERAL PERSHING.—The following physicians comprise the medical department of the staff under General Pershing: Colonel Alfred E. Bradley, surgeon; Colonel Marriette W. Ireland, Major George P. Peed and Captain Henry Beeuwkes, assistants.

MEDICAL OFFICER FOR CHINESE IN FRANCE.—It is announced by the American Board of Commissioners for Foreign Missions that Dr. James

F. Cooper of Foochow, China, has been granted a leave of absence for the duration of the war, to go to France as medical officer to a Chinese labor battalion. Thousands of Chinese laborers and artisans are being sent to the front in France to do ordinary work and release every Frenchman possible for war service. The recruiting of this Chinese service has been managed by the British Army. Hospitals and medical service for the laborers are necessary and Chinese speaking doctors are in demand. Dr. Cooper will have charge of a hospital at one of the larger bases. He takes to France with him four male Chinese nurses from the American Mission Hospital in Foochow.

DENTAL NURSES FOR U. S. SOLDIERS.—Dr. Edward C. Kirk, chairman of the Dental Committee of the Council of National Defense has appointed Dr. Alfred C. Fones of Bridgeport, Conn., to organize an oral hygienic committee to take charge of the dental work of American soldiers. Dr. Fones' first work will be instructing and training 1,000 Red Cross and registered nurses in dental hygiene. When these nurses are qualified they will be sent in groups to inspect the sixteen different training camps in the country, where they will do the preliminary work of putting the teeth of the soldier in condition for war. They will then report the need of more extensive work to the dentists who will follow to complete the task.

MORE RECRUITS FOR BASE HOSPITAL NO. 5.—Major Harvey Cushing, director of the Harvard Unit known as Base Hospital No. 5 has sent word from France that the hospital requires forty more enlisted men. This hospital has 1000 beds, double the number expected when the unit left Boston. There is need also of an additional number of physicians and nurses.

THE PRINCE GEORGE AS A HOSPITAL SHIP.—The *Prince George*, which has sailed between the port of Boston and Yarmouth, N. S., has been taken by the British Government to be used as a hospital ship abroad. The ship was built at Hull, Eng., in 1899, and was among the fastest of the ships entering this harbor.

HEALTH CONDITIONS IN THE NAVY.—The committee appointed by Secretary Daniels, consisting of Dr. William H. Welch, Dr. Abraham Flexner and Nathan Strauss, to investigate health conditions in the Navy, makes report that the hospital ship *Solace* has been well managed. After interviewing more than one hundred men who were aboard the ship during the period covered by the complaint of poor management, the committee states that the general testimony was to the effect that the men received what they wanted, needed and asked for, and in the judgment of the committee there was no lack of kindness and intelligent care on the part of Dr.

Blackwood and his assistants. They were dealing throughout the month of May with an unprecedented emergency, and in handling it they acquitted themselves admirably. Furthermore, the committee consider that the medical personnel in charge of the fleet's naval hospitals are all entitled to the highest praise for their devoted and untiring efforts and for the success which they achieved under extremely difficult conditions.

CONTRIBUTION TO THE RED CROSS.—The Boston Metropolitan Chapter, American Red Cross, reports that a contribution of \$2535.68 has been received from the Vincent Club of Boston, the proceeds of its recent theatrical performance.

NEED OF RECRUITS IN THE MEDICAL CORPS.—In addressing the recent meeting of the American Medical Association, Dr. Rupert Blue, surgeon-general of the United States Public Health Service, called attention to the great demand for physicians as medical officers. Dr. Blue stated that when the draft begins, physicians of the country will have to examine at least 1,500,000 men in selecting the first five hundred thousand soldiers. Within the next six months the army and navy will require about ten thousand medical officers. At the meeting of the section on preventive medicine and public health, the problems of sanitation and the part that medical men will take in the mobilization of the great army were discussed. Dr. W. Irving Clark, Jr. of Worcester, spoke on "The Protection of the Health of the Workers in War."

Col. T. H. Goodwin, ranking medical officer of the Balfour commission, addressed the Association on the immediate need of the Allies for medical assistance and stated that human endurance could not stand much more than the surgeons of the Entente allies were now undergoing.

"On a short line there are from 20,000 to 30,000 wounded in but a few hours," he continued. "Shall we leave them there or get them to the hospitals? Suppose we left them to crawl in shell craters to suffer for hours and in many cases for days. People ask why need medical men be killed, as they are non-combatants and should be behind the firing line. I think you will realize that the medical men must be on the firing line if the wounded are to receive proper care. Our losses of medical men have been considerable."

Dr. Franklin H. Martin, chairman of the medical section of the Council of National Defense, stated that only 3000 men have enlisted thus far in the medical officers' reserve corps. There are 9000 young doctors in this country between the ages of twenty-one and thirty-one who are liable to conscription and who should have enrolled themselves in the Medical Reserve Corps. Dr. Martin stated that more than

twenty-five thousand physicians and surgeons were needed for European service.

Colonel Theodore Roosevelt addressed the Association and made a ringing appeal to every man to offer his services to the Government, to be not only willing but determined to enroll himself in some department where he can be of use.

WAR RELIEF FUNDS.—On June 24 the totals of the principal New England war relief funds reached the following amounts:

French Wounded Fund	\$234,118.87
Armenian Fund	195,842.39
French Orphanage Fund	113,187.77
Surgical Dressings Fund	101,752.97
Serbian Hospitals Fund	94,665.00
Boston Ambulance Fund	85,174.48
Polish Fund	76,034.84
French Phthisis Fund	67,384.33
Italian Fund	42,199.87
Russian Refugees' Fund	4,110.00
War Dogs' Fund	653.25

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending June 23, 1917, the number of deaths reported was 242, against 233 for the same period last year, with a rate of 16.34, against 15.98 last year. There were 37 deaths under one year of age, against 34 last year, and 72 deaths over 60 years of age, against 81 last year.

The number of cases of principal reportable diseases were: diphtheria, 74; scarlet fever, 26; measles, 194; whooping cough, 10; typhoid fever, 6; tuberculosis, 55.

Included in the above were the following cases of non-residents: diphtheria, 9; scarlet fever, 2; tuberculosis, 6.

Total deaths from these diseases were: diphtheria, 7; scarlet fever, 2; measles, 3; tuberculosis, 30.

Included in the above were the following cases of non-residents: diphtheria, 2; scarlet fever, 1; tuberculosis, 3.

MARYLAND UNIVERSITY MEDICAL ALUMNI.—The New England Alumni Association of Maryland University School of Medicine held its eighth annual reunion in Boston on June 13th. About fifty attended. The following officers were elected for the coming year: Dr. George L. Yoosuf, Worcester, secretary and treasurer; vice-presidents by States: Dr. R. H. Morris, Everett, Mass.; Dr. L. E. Williard, Saco, Me.; Dr. Fred von Tobel, New Hampshire; Dr. F. C. Angell, Vermont; Dr. Fred Devine, Rhode Island; Dr. T. M. Ryan, Connecticut.

COLLEGE OF PHYSICIANS AND SURGEONS.—The thirty-eighth annual commencement exercises of the College of Physicians and Surgeons of Boston were held on June 13th. The degree of doctor of medicine was awarded to eleven candidates.

SUCCESS OF DISTRICT NURSING ASSOCIATION.—In addressing the National Conference of Charities and Corrections, Miss Mary Beard of the Instructive District Nursing Association of Boston stated that fifteen thousand homes were visited by the organization in Boston last year. Nearly a fourth of the patients were children and an equal number were maternity cases. The services of the Association reduced the death rate among babies by as much as fifty per cent. in some parts of the city.

MORTALITY INCREASE IN BOSTON.—It is reported by the Instructive District Nursing Association that the death rate among women occasioned by childbirth in Boston is very high. From the beginning of the twentieth century, the death rate soared in this state at an appalling rate, and only within the past four or five years has the menace to life shown promise of mitigation. In Massachusetts the death rate from diseases caused by pregnancy and confinement was 11.1 in each 100,000 of population. It was 14.4 in 1913. In Boston the rate increased from 18.5 to 20.6 during those thirteen years, while the death rate from tuberculosis was much reduced and the number of deaths from typhoid and diphtheria was cut in half. In marked contrast stands the record of New York City, which reduced the corresponding death rate from 20.3 in 1905 to 14.1 in 1913.

INFANTILE PARALYSIS FUND.—The infantile paralysis fund, it is reported, has reached \$12,434.95.

NEW ENGLAND NOTES.

NEW SUPERINTENDENT OF BANGOR STATE HOSPITAL.—The appointment of Dr. Pearl T. Haskell to the position of superintendent of the Bangor State Hospital follows the resignation of Dr. F. L. Hills. The election was made by the board of trustees and is subject to confirmation by the governor and council.

REGARDING PRACTICES OF PHYSICIANS CALLED TO WAR SERVICE.—At a joint meeting of the Belknap and Grafton (N. H.) County Medical Societies held on June 12, a resolution was adopted pledging the members to do all in their power to care for the practice of their fellows who may be called into medical service. The practice is to be restored upon return of the physician, with a fair per cent. of the income derived from the practice that was normally theirs.

The Massachusetts Medical Society.

ANNUAL MEETING OF THE COUNCIL.

JUNE 12, 1917.

THE annual meeting of the Council was held in the foyer of the Copley-Plaza Hotel, Boston, Tuesday, June 12, 1917, at twelve o'clock, noon. The President, Dr. Samuel B. Woodward, was in the chair and the following 126 Councilors present:

BARNSTABLE. C. W. Milliken, M.N.C.	MIDDLESEX SOUTH (Con'd.) Julia Tolman. C. T. Warner. G. W. Whiting. Alfred Worcester.
BERKSHIRE. A. P. Merrill, V.P.	NORFOLK. E. H. Brigham, L. A. N. Broughton. H. C. Ernst, C. C. B. Faunce. T. F. Greene. R. W. Hastings. G. W. Kaan. Bradford Keat. W. C. Kite. Joseph Kittredge. W. A. Lane. Louis Meudelsohn. T. J. Murphy, M.N.C. A. P. Perry. J. W. Pratt. S. H. Rubin. Victor Safford. R. D. Schmidt. H. F. R. Watts.
BRISTOL NORTH. W. H. Allen, V.P. W. O. Hewitt. F. A. Hubbard, M.N.C.	NORFOLK SOUTH. C. S. Adams. G. H. Ryder, M.N.C.
BRISTOL SOUTH. E. F. Cody. E. F. Curry. W. A. Dolan. R. W. Jackson. A. H. Mandell.	PLYMOUTH. A. A. MacKeen. Gilman Osgood. E. E. Paine, M.N.C. F. J. Ripley. F. G. Wheatley.
ESSEX NORTH. T. R. Healy, V.P. R. V. Baketel. I. J. Clarke. G. E. Kurth. E. H. Noyes. J. J. O'Sullivan. F. W. Snow, M.N.C.	SUFFOLK. H. F. Vickery, V.P. E. S. Boland. H. I. Bowditch. G. W. W. Brewster. M.N.C.
ESSEX SOUTH. P. P. Johnson, V.P. C. H. Bangs. H. K. Foster. W. G. Phippen. Emile Poirier, M.N.C. R. E. Stone.	W. L. Burrage, S. F. J. Cotton. A. L. Chute. E. A. Codman. J. A. Cogan. G. A. Craigin. E. G. Cutler. R. L. DeNormandie. Albert Ehrenfried. C. M. Green, C. J. B. Hawes, 2d. H. T. Hutchins. R. W. Lovett. J. L. Morse. Anna G. Richardson. W. H. Robey, Jr. G. B. Shattuck, C. G. C. Smith. G. G. Smith. R. M. Smith. A. K. Stone, T. F. B. Talbot.
FRANKLIN. G. P. Twitchell, M.N.C.	WORCESTER. M. E. Fallon, V.P. W. P. Bowers, Ex-P. W. J. Delahanty. Homer Gage. David Harrower, M.N.C. W. L. Johnson. G. O. Ward. F. H. Washburn. S. B. Wheeler. S. B. Woodward, P.
HAMPDEN. J. M. Birnie, V.P. T. S. Bacon. L. D. Chapin. A. C. Eastman. R. A. Greene. E. A. Knowlton. A. G. Rice. G. L. Schadt.	WORCESTER NORTH. A. P. Mason, M.N.C.
HAMPSHIRE. C. A. Byrne. J. S. Hitchcock, M.N.C.	
MIDDLESEX EAST. W. H. Kelcher. G. N. P. Mead.	
MIDDLESEX NORTH. A. R. Gardner. W. B. Jackson. J. H. Lambert. E. G. Livingston.	
MIDDLESEX SOUTH. G. T. Tuttle, V.P. E. S. Abbot. H. T. Baldwin. S. O. Baldwin. F. E. Bateman. C. H. Cook. John Duff. W. E. Fernald. G. W. Gay, Ex-P. C. M. Hutchinson. A. A. Jackson. Edward Mellus. C. E. Mongan. C. E. Prior. W. A. Putnam. Joseph Stanton. E. H. Stevens, M.N.C. F. R. Stubbs. F. W. Taylor.	

The reading of the records of the last meeting was dispensed with by vote. The Secretary read the oath of office taken by the Treasurer, Arthur K. Stone, before the President, February 9, 1917, being a part of the records of the Council. The names of the Nominating Committee were read by districts and fourteen principals and alternates retired. Dr. Charles M. Green presented the report of the Committee on Membership and Finance, as to Membership, and the report was accepted and its recommendations adopted. (See Appendix for report.) He read a report of the same committee as to Finance. (See Appendix.) The first recommendation of this report, namely that the vote of the Council, February 7, 1917, that \$5000 be appropriated for the use of the Committee of 23 on Health Insurance, be rescinded, was put to a vote and passed unanimously. As regards the second recommendation it was voted that action be postponed. As to the third it was *Voted*: That, in accordance with the provisions of Chapter VI, Section 4 of the By-Laws, next year and thereafter the Treasurer of the Society be bonded in the sum of \$5000.

Dr. J. Arthur Gage read the report of the Committee on Ethics and Discipline (see Appendix) and it was accepted and recorded. A report for the Committee on Medical Education and Medical Diplomas, read by Dr. Harold C. Ernst, was accepted and filed. (see Appendix.) Dr. W. H. Robey, Jr., read the report of the Committee on State and National Legislation and it was greeted with applause and accepted. (See Appendix.) The report of the Committee on Public Health, embodying a report of the health agent, Mr. Ingham, was presented by Dr. Hamilton and was accepted. (See Appendix.) The committee appointed to consider the petition of Edgar F. Haines for restoration to the privileges of fellowship was acted on favorably.

The petitions of the following for restoration were read severally and committees were appointed to consider them:

For A. C. Leach of Orange	{ G. P. Twitchell H. F. M. Smith S. J. TenBroeck
For J. F. R. Biron of Amesbury	{ O. P. Mudge J. Q. Adams J. W. Rand
For E. E. Doble of Quincy	{ N. S. Hunting T. J. Dion F. R. Burke
For Lena V. Ingraham of Brookline	{ R. W. Hastings G. W. Kean Joseph Kittredge
For J. C. Stammers of New York	{ C. H. Hare T. F. Leen A. M. Fraser
For W. J. Johnstone of Jamaica Plain	{ A. N. Broughton A. P. Perry Victor Safford

The Treasurer made a report (see Appendix) and it was accepted by vote, as was the report of the Librarian. (See Appendix.) The report of the Committee of 3 on Health Insurance was read by Dr. F. J. Cotton (see Appendix) and it was voted to accept it and to discharge the committee in accordance with its recommendations. Dr. Charles E. Mongan read the report of the Committee of 23 on Health Insurance (see Appendix) and it was received with applause and recorded, by vote. Discussion as to the amount of the appropriation

needed by this committee was participated in by Dr. Bowers, Dr. Worcester, Dr. A. K. Stone and Dr. P. P. Johnson, and on motion by Dr. Mellus it was *Voted*: That \$2500 from the uninvested funds of the Society be and it is appropriated hereby for the use of the Committee of 23 on Health Insurance.

Dr. A. N. Broughton read the report of the Committee on the Workmen's Compensation Act and it was accepted and the committee discharged in accordance with its recommendations. (See Appendix.) On motion by Dr. P. P. Johnson it was *Voted*: That a committee on Workmen's Compensation be appointed by the Chair, to consist of five members of the Council and one member from each District Society.

Dr. P. E. Truesdale was voted the privilege of the floor and spoke on the subject of military medicine and the importance of the establishment and endowment of a chair in that department in a medical school. At present there is only one such chair in the country, that in the University of the City of New York, and that is not endowed. Dr. F. J. Cotton presented the following resolutions and they were passed:

Resolved: That the President be requested to appoint a committee of five members of the Society, to look into the matter of an academic chair of Military Medicine in this Commonwealth, and if in its judgment the project is feasible, to do whatever may be done to further this scheme, and to report to the next meeting of the Council.

Resolved: That the President, if possible, announce the formation of this committee and its membership at the Annual Meeting of the Society.

Dr. A. N. Broughton asked for an appropriation of \$1000 for the use of the newly appointed committee on Workmen's Compensation and said that in compliance with the terms of Chapter VII, Section 3 of the By-Laws he would present such a request to the Committee on Membership and Finance.

Dr. F. J. Cotton talked on the subject of Reconstruction Hospitals for the readjustment of the cripples from the War and asked for the privilege of the floor for Dr. E. G. Brackett, in charge of the first hospital of such a character on the summit of Parker Hill in Boston, and it was so voted. Dr. Brackett explained that about eighty per cent. of the men who returned invalided from the front needed reconstruction work to fit them to réenter civil life; that they needed especially vocational training and unless they are returned speedily they become dependents on society, the problem merging soon from a medical to an industrial one. At present there are about a thousand disabled soldiers a month returning to Canada and it will not be long before our soldiers will come here. He bespoke the interest and sympathy of the Society. On motion by Dr. Gay it was *Voted*: That the Council heartily approves of any action looking to the encouragement of the erection and maintenance of Reconstruction Hospitals.

The President read a letter from Mrs. Frances C. Axtell, Vice-Chairman of the United States Employees' Compensation Commission, Washington, D. C., asking for the coöperation of the Massachusetts Medical Society in the administration of the federal law for compensation and asking certain questions as to fees in this state. Dr. F. J. Cotton introduced these preambles and resolutions and they were passed unanimously:

Inasmuch as fee-tables rarely, if ever, have proved satisfactory to any one concerned, but always a source of contention;

Inasmuch as a fee-table for the state could be drawn up equitably only if at all, with differing rates for different districts throughout the state—a colossal undertaking;

Inasmuch as any fee-table necessarily operates to reduce all services to one level,—and that the minimum level of compensation and of efficiency;

Inasmuch as we have been against a fee-table in Workmen's Compensation work under the state law, and have worked out a scheme of compensation based on the current rates of the locality in which the service is rendered—a scheme which with the cooperation of our Industrial Accident Board has worked out fairly well and is expected to work better when this year's amendments to the law become effective;

Therefore, Be it Resolved, that we record ourselves as not in favor of any fee-table system, but rather in favor of a scheme of compensation at the "industrial rate" for the given community, with a competent small commission for the state, to pass on the adequacy of the services rendered and the reasonableness of the charges therefor.

Dr. A. P. Merrill introduced the following resolutions and being put severally by the Chairman they were passed:

Be it Resolved: That the Massachusetts Medical Society emphatically urges its members, especially the younger men, to offer their services to the Medical Reserve corps of the United States Army; and be it

Resolved: That the President be and he is empowered hereby to appoint a committee of five members to cooperate with the Government to secure this result; and be it

Resolved: That each District Medical Society be urged to take action relative to the care of dependent families of members who go into active service.

In conformity with the second resolve the President appointed this committee:

H. D. Arnold, *Chairman*,
J. B. Blake,
J. M. Birnie,
A. P. Merrill
E. H. Bradford.

Dr. A. N. Broughton presented the following resolution that was passed unanimously:

Resolved: That the Massachusetts Medical Society in its annual meeting, through its Council, recognizes the widespread demand throughout the country for an intelligent coordination of all measures which will contribute to the successful prosecution of the war; and realizing how largely alcohol is a factor in lessening all forms of efficiency, physical, intellectual, and moral, and further, the intimate connection between drinking, prostitution, and the spreading of venereal disease, wishes to place itself on record as favoring national prohibition for the duration of the war.

Dr. E. F. Cody offered this resolution, and it was passed:

Resolved: That the Massachusetts Medical Society, through its Council, requests that the Secretary of the Navy restore the regulations concern-

ing venereal prophylaxis abrogated by him some years ago and that the Massachusetts Senators and Representatives in Congress be requested to cooperate in this matter.

The President read obituaries of George Baker Underwood and Joe Vincent Meigs, Councilors who had died since the last meeting of the Council. The Nominating Committee brought in a list of nominations for officers and orator and on proceeding to ballot, Dr. Hubbard and Dr. Fallon acting as tellers, the following were declared elected:

President, Samuel B. Woodward, Worcester; Vice-President, George P. Twitchell, Greenfield; Secretary, Walter L. Burrage, Boston; Treasurer, Arthur K. Stone, Boston; Librarian, Edwin H. Brigham, Brookline; Orator, Myles Standish, Boston.

The President nominated and the Council appointed these standing committees for the ensuing year:

OF ARRANGEMENTS.

J. H. Young, J. L. Huntington, R. H. Miller, C. H. Lawrence, Jr., Donald Macomber, A. W. Reggio.

ON PUBLICATIONS AND SCIENTIFIC PAPERS.

G. B. Shattuck, E. W. Taylor, R. B. Osgood, F. T. Lord, R. M. Green.

ON MEMBERSHIP AND FINANCE.

C. M. Green, A. Coolidge, Jr., Samuel Crowell, F. W. Taylor, Alfred Worcester.

ON ETHICS AND DISCIPLINE.

J. A. Gage, J. W. Bartol, Henry Jackson, T. J. Robinson, David Cheever.

ON MEDICAL EDUCATION AND MEDICAL DIPLOMAS.

H. C. Ernst, C. F. Painter, H. W. Newhall, J. F. Burnham, C. Frothingham, Jr.

ON STATE AND NATIONAL LEGISLATION.

S. B. Woodward, F. G. Wheatley, W. P. Bowers, W. H. Robey, Jr., J. S. Stone.

ON PUBLIC HEALTH.

E. H. Bigelow, W. I. Clark, Annie L. Hamilton, R. I. Lee, E. F. Cody.

Adjourned at 2.05 P.M.

WALTER L. BURRAGE, *Secretary*.

APPENDIX TO PROCEEDINGS OF THE COUNCIL, JUNE 12, 1917. REPORTS OF COMMITTEES AND OFFICERS.

REPORT OF THE COMMITTEE ON MEMBERSHIP AND FINANCE, AS TO MEMBERSHIP.

Recommendations:

1. That the following named Fellows be allowed to retire, under the provisions of Chapter I, Section 5, of the by-laws:

Allen, Carl Addison, of Holyoke.
Dutton, Charles, of Wakefield.
Emerson, Edward Waldo, of Concord.
Loring, Robert Pearmain, of Newton Centre.
Putnam, Joseph Morrill, of Medford.
Root, Richmond Barbour, of Georgetown.
Stuart, James Henry, of Allston.

2. That dues of the following named Fellows be remitted as follows, under the provisions of Chapter I, Section 6, of the by-laws:

Brace, George Wells, of Southwick, to the amount of \$29, provided the dues of 1917 are paid before July 1.

Brown, Melvin James, of Mars Hill, Maine, to the amount of \$10, provided the dues for 1917 are paid before July 1.

DeLange, Charles Petit, of Lynn, to the amount of \$10.

Gordon, Stephen Masury, of Fall River, to the amount of \$15, provided the dues of 1917 are paid before July 1.

Gray, Alice Maud, of Roxbury, to the amount of \$10, provided the dues of 1917 are paid before July 1.

Hagopian, Levon George, of Lynn, to the amount of \$15, provided the dues of 1917 are paid before July 1.

Proctor, Thomas Melville, of So. Wrentham, to the amount of \$15.

3. That the following named Fellows be allowed to resign, under the provisions of Chapter I, Section 7, of the by-laws:

Archambault, Lionel Maximilian, now of Arctic, Rhode Island, with remission of dues to the amount of \$24.

Ash, James Earle, of Cambridge.

Cosby, Edwin Gordon, now of 2d Ave. and 20th St., New York, with remission of the dues of 1917.

Fiske, Eben Winslow, now of 807 Westinghouse Building, Pittsburgh, Pa., with remission of the dues for 1917.

Green, Harold Russell, Bradford, N.H., with remission of dues for 1917.

Hall, Custis Lee, of Boston, with remission of the dues of 1917.

Irwin, Gratton George, now of 495 Congress St., Portland, Maine.

McCabe, Francis Joseph, of Providence, Rhode Island. Merritt, Louis Arthur, of Wollaston, with remission of the dues for 1917.

Newburgh, Louis Harry, of Ann Arbor, Michigan.

Swift, Milne Barker, of Orlando, Florida.

4. That the following named Fellows be deprived of the privileges of fellowship, under the provisions of Chapter I, Section 8, of the by-laws:

Allen, George Edgar, of Lynn.

Barrier, Emil August, of Allston.

Blanchard, William Herbert, of Quincy.

Brady, Cecil Norbert, of West Newton.

Brickley, William Joseph, of Charlestown.

Burrell, Harry Cutter, of Medford.

Clement, Merton Wallace, of Worcester.

Connor, George James, of Haverhill.

Cooke, George Andrews, of Montague.

Donlan, Charles Edwin, of Boston.

Downing, Charles Harland, of Everett.

Dunham, Harry Bartlett, of Marion.

Halloran, Timothy Joseph, of Lowell.

Heffernan, Dennis William, of Holliston.

Kendrick, Joseph Thomas, of Dorchester.

Lynch, Henry Edmund, of Holyoke.

Mahoney, Matthew Patrick, of Lowell.

Mara, Joseph Lawrence, of Brockton.

Messer, Edward Raymond, of Pittsfield.

Parker, Helen Schlesinger, of Brookline.

Reynolds, John Timothy, of Quincy.

Scanlan, Maurice Thomas, of Dorchester.

Shaw, Walter Augustus, of Springfield.

Shulman, David Hermann, of Roxbury.

Smith, William Benjamin Tyng, of Bondsville.

Stockbridge, Alberto Horatio, of Lynn.

Stockwell, Edgar Washburn, of Great Barrington.

Sweeney, Edward Joseph, of Springfield.

Worthen, Clarence Fred, of Weston.

5. That the following named Fellows be allowed to change their district membership, without change of legal residence, under the provisions of Chapter III, Section 3, of the by-laws:

Barron, Maurice Edward, from Middlesex South to Suffolk.

Burnett, Francis Lowell, from Essex South to Suffolk. Fuller, Solomon Carter, from Middlesex South to Worcester.

Gunter, Fred Clarke, from Middlesex South to Suffolk.

Hipkiss, George, from Middlesex South to Suffolk.

MacKinnon, Donald Lauchlin, from Norfolk to Suffolk.

Pemberton, Frank Arthur, from Norfolk to Suffolk.

Wilcox, DeWitt Gilbert, from Middlesex South to Suffolk.

CHARLES M. GREEN, *Chairman.*

REPORT OF THE COMMITTEE ON MEMBERSHIP AND FINANCE, AS TO FINANCE.

Recommendations:

1. That in view of the fact that the following vote, passed by the Council at its last preceding meeting, on February 7, was in disaccord with the by-laws, Chapter VII, Section 3, which requires that the Committee on Membership and Finance "shall consider all requests for extraordinary appropriations and shall recommend to the Council whether or not they shall be granted," and inasmuch as the vote was passed without reference to said Committee and without recommendation from it, it is recommended that the said vote be rescinded:

"*Voted:* That an amount not exceeding \$5,000 be appropriated from the uninvested funds of the Society to be expended for the uses of the Committee of 23 on Health Insurance, and that next year an assessment in addition to the customary assessment be levied on the Fellows of the Society to reimburse the treasury for whatever money may have been so expended."

2. That in view of the written request of the Committee of 23 on Health Insurance, renewed under date of March 15, 1917, that an appropriation of \$5,000 be made for the purposes of said Committee.

That an appropriation not to exceed \$5,000 be made from the uninvested funds of the Society for the uses of the Committee of 23 on Health Insurance.

3. That in accordance with Chapter VI, Section 4, of the by-laws, concerning the bonding of the Treasurer, that next year and thereafter the Treasurer be bonded in the sum of \$5,000.

CHARLES M. GREEN, *Chairman.*

REPORT OF THE COMMITTEE ON ETHICS AND DISCIPLINE.

The work of your Committee during the past year has not developed any new questions bearing upon the standards of our Society, although the usual number of complaints demanding investigation have come before it for adjudication.

The meetings have been fully attended, all members have loyally shared in the necessary work, and their decisions have been uniformly harmonious.

Only two complaints charging neglect of a case of ophthalmia neonatorum have been presented this year. One case had been very thoroughly investigated and settled by inspectors from the local Board of Health, the State Board of Health and an independent organization. The other had led to investigation not only by the State Board of Health, but by the Board of Registration in Medicine, and appropriate action had been taken.

Such action seems wise, as neglect in these cases is an offense against the laws of the State. It is, however, evident that the profession has become better educated to the importance of the proper notification and care of these cases, thus indicating a marked improvement over previous years.

Minor questions affecting the mutual relations of members of the profession have been adjusted, and several publications extolling the special ability of

individual members have called for admonishing letters.

A question as to the right of our members to participate in the propagation of birth control literature seemed to your committee a matter of individual conscience and outside its jurisdiction.

New methods of practice that have come into existence recently, such as mutual and group society work, have been brought to our attention, but in their last analysis they fall under the head of contract practice, a subject already thoroughly discussed by this Council.

The question of advertising is still one that demands much of the Committee's time, and it seems more imperative than last year that it should receive the serious attention of the Society. Today the Massachusetts Medical Society supports in part an official journal that sells advertising space, and the action of the journal in this respect must affect the standard to be maintained by the members of the Society. This fact alone will necessitate action in the near future. In addition there has been a marked change in the attitude of the profession toward advertising in the public press, much space at the present time being used to inform the public on many questions of medical practice. What rights the individual members have in this respect, and in how far they conflict with the standard prescribed by the Code of Ethics of the Society, is a question for the consideration of the Council.

The Committee wish to acknowledge the valuable assistance of the Secretary in systematizing the cases presented for consideration, and in preparing the new "form letter" which has already proved an important feature in facilitating the investigation of complaints and in increasing the respect for the by-laws of our Society.

J. ARTHUR GAGE, *Chairman*.

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION AND MEDICAL DIPLOMAS.

On behalf of the Committee on Medical Education and Medical Diplomas, I beg to present the following report:

Exercising its authority to rule upon diplomas from schools not on the accepted list, and presented by candidates for Fellowship in the Massachusetts Medical Society, a number of cases have been disposed of during the past year. The fear expressed by some Fellows that the adoption of the vote of June 9, 1914, in accordance with which the Committee has the power, under certain conditions, to recognize a medical degree coming from a not recognized medical school, would result in the admission of a considerable number of graduates of such schools, has not been realized. The safeguards thrown about the power thus granted has resulted in the affirmative action by the Committee on the applications of but eight individuals since the passing of the vote. Everyone of these applicants has been highly recommended by his neighbors, and evidence has been presented in each case showing that he would be a desirable member of the Massachusetts Medical Society.

A matter that has occupied the attention of a Sub-Committee is a letter received last fall from Dr. N. P. Colwell, Secretary of the Council on Medical Education of the American Medical Association. This refers to the ease with which charters for educational institutions may be secured in many of the States of the Union. By the facts accompanying it, it appears that in most states, any coterie of men, no matter how ignorant, by paying a small fee can secure a charter to open an educational institution, with the right to grant any or all degrees—no questions being asked as to whether they have the needed finances, or the teachers and teaching facilities, which are essential to furnish the education usually required for a Bachelor's or a Doctor's degree.

A suggestion was made that a campaign should be started, whereby the chartering of educational institutions may be safeguarded by legislative enactment. This letter called the attention of the Committee to the condition of things in this Commonwealth, and it is interesting to know that there are now in existence in Massachusetts seventeen incorporated medical schools or colleges—exclusive of those attached to universities like the Medical Schools of Harvard, Tufts, or Boston Universities. Only six of these incorporated medical schools are empowered to confer degrees, and, so far as our present information goes, at least nine of them are at present inactive. In regard to these inactive schools, or perhaps it would be better to say charters, there is no means for knowing what has become of the enabling instruments. A letter from the office of the Secretary of the Commonwealth reads as follows: "Incorporated medical schools and colleges are not required by law to make annual returns to this office, and there is, therefore, nothing of record here to show who are the persons in authority in these corporations at the present time, nor is there anything on file here to show who would have the power to resuscitate any of these corporations." This condition seems to your Committee to be a threatening one, and it would be well to consider what means, if any, can be devised to prevent dangers arising from the reviving of these charters in the hands of unscrupulous persons.

The Committee lent its individual assistance to the support of the amendment to the Medical Practice Act reported by the Legislature, and offered its assistance to the Committee having that matter in charge.

By reason of an unfortunate misunderstanding, the Committee this year was not represented at the meeting of the Council on Medical Education of the American Medical Association in Chicago last winter. It is unable, therefore, to give a personal report of the occurrences at that meeting.

The new list of accepted medical schools and colleges was accepted last year and printed, and is at the service of the Secretaries of the District Societies.

HAROLD C. ERNST, *Chairman*.

REPORT OF THE COMMITTEE ON STATE AND NATIONAL LEGISLATION.

Almost immediately after the appointment of this Committee, a meeting was held and plans made for the study of legislative matters. President Woodward decided to make a strong effort to rouse the Auxiliary Committee to a sense of its duties and importance. On December 2, 1916, the President invited the members of the main and auxiliary committees to a luncheon at the Harvard Club. Twenty-six of the forty members were present and expressed their willingness to assist the main Committee by presenting to their senators and representatives the merits or faults of the various bills affecting the public health and the medical profession.

The Committee on State and National Legislation held weekly meetings for ten weeks, and sent representatives to all hearings of bills affecting the public health.

SENATE BILL No. 135.

At the request of the Committee on Workmen's Compensation Act, our Committee met several times with this Committee and discussed Senate Bill No. 135. Section 5 was the part of the act the Committee desired to pass, which provided that "the Association shall furnish adequate and reasonable medical and hospital services and medicines, when they are needed. In the event that the employee shall be treated by a physician of his own selection, or where in case of an emergency, or for other justifiable cause,

a physician other than the one provided by the Association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the Association, subject to the approval of the Industrial Accident Board. In contested cases such approval shall be granted only after the Board finds that the employee was so treated by such physician, or that there was such justifiable cause, and, in all cases, that the services were adequate and the charges reasonable."

This bill became law on April 24th and great credit is due Dr. A. N. Broughton and his Committee.

HOUSE BILL No. 1886.

This bill would give the State Board of Registration in Medicine, Dentistry, Pharmacy, and Veterinary Medicine, authority by a majority vote of the entire Board, to suspend, revoke, or cancel any certificate, registration, license or authority issued by any one of said Board, in case of insanity or where the holder is guilty of deceit, malpractice, gross misconduct or any offense against the law relative to his profession.

This legislation was recommended by the special commission to investigate the extent of the use of habit-forming drugs in the Commonwealth and was passed by the legislature. The bill was strongly supported by this Committee, and after being passed by the legislature, was signed by the Governor.

HEALTH INSURANCE.

The Committee voices the opinion of most of the members of the medical profession in Massachusetts who have studied the problem of health insurance. While it may be desirable in some form, its many aspects are as yet too little understood by employers, employees and the medical profession to have any act relative to health insurance become law. At the hearings the Committee advocated further study of the matter.

There has been no legislation as yet.

HOUSE BILL No. 710.

This bill, relative to insuring the purity of vaccine virus as used in the vaccination of school children, aimed to prevent compulsory vaccination, and was lost.

HOUSE BILL No. 1489.

An act to permit children and other persons to attend public schools without being vaccinated, was lost.

Both bills, No. 710 and No. 1489, were ably opposed by representatives of the Committee and by the work of our Auxiliary Committee.

HOUSE BILL No. 590.

A bill relative to the registration of nurses and the inspection of hospital training schools was introduced by the Massachusetts State Nurses Association and was supported by the Committee.

This bill was given leave to withdraw.

HOUSE BILL No. 224.

The Board of Registration in Medicine asked that candidates be required to have a full four-years' course of instruction of not less than thirty-six weeks in each year; that the Board be allowed by unanimous vote to revoke any certificate issued by it and cancel the registration of any physician, for a period not exceeding one year, who has been shown at a hearing to have been guilty of gross and confirmed use of alcohol in any of its forms while engaged in the practice of his profession, or of the use of narcotic drugs in any other way than for therapeutic purposes; or to have published, or caused to be published, or to have distributed, or caused to be distributed,

any literature contrary to the provisions of chapter three hundred and eighty-six of the acts of the year nineteen hundred and eight; or to have acted as principal or assistant in carrying on the practice of medicine by an unregistered person or by any person who has been convicted of the illegal practice of medicine, or by any registered physician whose license has been revoked either permanently or temporarily, or to have aided or abetted in any attempt to secure registration, either for himself or for another by fraud, or in connection with his practice, to have defrauded or attempted to defraud any person; and that whoever practises or attempts to practise any fraud in connection with the filing of an application, or whoever files an application under a false or assumed name, or under a name other than his own, or whoever personates or attempts to personate another applicant for registration, during an examination, shall, for each offense, be punished by a fine of not less than one hundred nor more than five hundred dollars or by imprisonment for three months, or by both such fine and imprisonment. In a case in which a provision of this or the preceding section has been violated, the person who committed the violation shall not recover compensation for services rendered.

The Committee approved and supported the bill, which was passed by the legislature after having the clause providing for one pre-medical year, equal to a year in a college of liberal arts, stricken out.

HOUSE BILLS No. 74 AND No. 1032.

House Bill No. 74 providing for the removal of sufferers from tuberculosis, and No. 1032 on the licensing of hospitals for tuberculosis: The Committee approved of and supported the bills, but questioned the necessity of establishing a special institution at a cost of \$50,000.

No. 74 was withdrawn by the proponents; No. 1032 failed on the third reading in the House.

HOUSE BILL No. 247.

This bill asked for an appropriation to permit the State Board of Health to make antipneumococcic serum.

The Committee thoroughly approved of this act but felt that the appropriation should be urged with the understanding that the treatment of pneumonia by sera is still in the experimental stage.

The bill was passed by the legislature, as was also Senate Bill No. 463, approving an act relative to specific material for protective inoculation, diagnosis or treatment to be furnished by the State Board of Health.

SENATE BILL No. 266.

To exempt foreign practitioners from examination. This was opposed by the Committee as it was practically the same bill which was introduced last year by which it would have been lawful for a certain "herb doctor" to practise without license, without knowledge of diagnosis, and without the control of the State Board of Registration in Medicine, and would have opened the way for many charlatans.

Committee gave leave to withdraw.

SENATE BILL No. 149.

An act to establish a Massachusetts Board of Immigration was approved by the Committee, and the legislature created such a board.

HOUSE BILL No. 254.

Relative to the adulteration of drugs and food; was rejected in the House, March 26th.

HOUSE BILL No. 248.

Relative to the construction and maintenance by counties of tuberculosis hospitals for certain cities and towns; was enacted in the House, May 7th, and in the Senate, May 8th.

This was approved by the Committee.

HOUSE BILLS No. 251 AND No. 2017.

No. 251 was an act to authorize the State Department of Health to provide for the protection of the milk supply. It was ordered to its third reading as No. 2017.

Engrossed in the House, April 28th; rejected in the Senate, May 8th.

These bills were approved by the Committee.

HOUSE BILLS No. 1965 AND No. 253.

Relative to the classification, grading, and labelling of milk; were enacted in the House May 8th, and in the Senate May 9th.

Both bills were approved by the Committee.

HOUSE BILLS No. 252, No. 546, No. 1880, AND No. 1912.

Relative to the pasteurization and sale of milk, were enacted in the House May 9th, and in the Senate May 10th.

These bills were approved by the Committee.

SENATE BILL No. 22.

A bill to prohibit experiments on living dogs was opposed by the Committee, and defeated.

SENATE BILL No. 291.

An act which provided that no member of the Board of Registration in Medicine shall, at the expiration of his term of service, become his own successor in office. This bill was opposed by the Committee, and defeated.

SAMUEL B. WOODWARD, *Chairman*,
WALTER P. BOWERS,
FRANK G. WHEATLEY,
JAMES S. STONE,
WILLIAM H. ROBEY, JR., *Secretary*.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH.

The Massachusetts Medical Society has always taken a live interest in public health, and many of its activities have been directed towards improved sanitation and the prevention of disease. The Society has throughout its long history helped to preserve the health of the Commonwealth. The work of the Committee on Public Health, summarized in this report, adds another effort in this direction.

A group of generous subscribers, inspired with the ideal of conserving the health of our people, gave a sum of money sufficient to employ a special agent, and in June, 1916, Mr. E. A. Ingham was intrusted with the responsibilities of the position. Mr. Ingham is a member of the Department of Biology and Public Health of the Massachusetts Institute of Technology; he also has received the Certificate in Public Health from the School for Health Officers of Harvard University and the Massachusetts Institute of Technology, and is Lecturer in Hygiene and Sanitation at Tufts Medical and Dental Schools.

The basis of the work to be followed by the Agent is contained in the following vote passed by the Committee on Public Health:

1. To stimulate the interest of the medical pro-

fession in Massachusetts in sanitation, hygiene, and preventive medicine.

2. To stimulate the cities and towns of Massachusetts to employ full-time health officers.

3. To stimulate better work in medical inspection of schools, infant mortality, prenatal work, district nursing, anti-tuberculosis work, industrial hygiene, sanitary engineering, and the prevention of common communicable diseases.

4. To investigate the health conditions of the State with reference to public health work.

Realizing that the rural district is the weakest link in the sanitary chain, the campaign was organized so as to concentrate attention upon the problem of the small towns and country districts. It was the unanimous opinion of the Committee that sanitary progress in rural communities lags largely for want of trained leadership. It was therefore decided to emphasize the great value which would come from the employment of full-time health officers and public health nurses.

At about this time, a letter was received from the Chairman of the Committee for Rural Progress in Barnstable County, asking that that district be considered as a place to begin our work. Mr. Ingham investigated the situation on the Cape, and visited Barnstable, Bourne, Falmouth, Provincetown, Sandwich, Truro, and Yarmouth. In each case, the physicians, the members of the local boards of health, and other persons especially interested in public health work were consulted. A special effort was made to stimulate the interest of the medical profession in hygiene and sanitation.

The situation on the Cape, in general, appears to be not very encouraging. None of the towns have a population of over 5,000 and the tax rates are generally high. In some towns the area is so large in proportion to the population that a health officer would find it difficult to give proper attention to more than one town, while in other places local feeling and jealousy between towns serve as an obstacle to the Wellesley plan of cooperation. The large increase of population on the Cape, owing to the summer colony, presents special problems which require special consideration, and your Committee hopes to accomplish improvements along constructive lines, despite the difficulties.

Much work was done at Beverly to stimulate that town to employ a full-time trained official as guardian of its health. The Chairman of the Committee on Public Health gave an address on the subject at a public meeting held in the town hall. No decision has yet been reached.

Woburn has also been studied, and the Agent has made visits to other places, attended meetings, and given addresses.

Under the State Law, every city and town with a population of 5,000 must have at least one physician on its board of health. In the smaller towns, where the board of health (other than the board of selectmen) is elected, it is customary to have at least one medical member of the board, though this is not required by law. The physician who serves in this capacity is likely to bear the greater part of the responsibility of maintaining the public health work of the community, because he is best fitted for the work by training and experience. The remuneration for this form of public service is pitifully small, and the work inevitably interferes with private practice to a considerable extent. Hence, physicians in this situation often sacrifice much. Many of them feel the lack of special training, and an effort to establish a summer school to meet this situation is being considered.

Respectfully submitted,

M. J. ROSENAU, *Chairman*,

W. IRVING CLARK, JR.,

ENOS H. BIGELOW,

ANNIE LEE HAMILTON, *Secretary*.

REPORT OF THE TREASURER.

On February 9th, the newly elected treasurer was sworn in by the president and assumed his duties.

The securities of the Society were taken over from the estate of the late Edward M. Buckingham, inspected, and found correct. The bond of the former treasurer was transferred to the new treasurer, and is held by the chairman of the Committee on Membership and Finance.

The new treasurer employed Mr. Horace C. Hartsborn, a public accountant, to close the books of the late treasurer, to open new books, and to enter the accounts of the Society for the period from the first of January to the time that the new treasurer took charge of the funds of the Society.

In accordance with the vote of the Council the treasurer, after consultation with the Committee on Membership and Finance, has subscribed to \$5000 in the Liberty Bond issue.

The treasurer has paid bills contracted by the various Committees and officers of the Society that have received the approval of the president, and has the funds of the Society in his possession, deposited with the Old Colony Trust Company and the New England Trust Company.

Respectfully submitted,

ARTHUR K. STONE, *Treasurer*.

REPORT OF THE LIBRARIAN.

The Librarian reports that during the past year he has attended to the various duties of his office with special attention to having the BOSTON MEDICAL AND SURGICAL JOURNAL sent promptly to the Fellows.

A third edition of the Annual Directory of the Officers and Fellows was compiled and issued as a Supplement to the JOURNAL. It had some errors and omissions, due largely to the loss of the original manuscript and the first revise by the Post Office Department.

Respectfully submitted,

EDWIN H. BRIGHAM, *Librarian*.

REPORT OF THE COMMITTEE OF 3 ON HEALTH INSURANCE.

The Committee on Health Insurance, appointed a year ago to confer with the Recess Committee of the Senate and House charged with the consideration of this subject, herewith requests that it be discharged, having done that service for which it was appointed.

Through the summer and fall and until the Recess Committee was ready to report we studied this matter and kept in close touch with this Committee, not, we think, without success.

In October last we reported our work to that date in some detail.

You have seen the report of the Recess Committee and realize that any legislation that may go through would not now be passed without adequate recognition of the medical men's interest and rights.

It does not seem, moreover, that such legislation is likely to pass for some time in any form.

There is a new Committee of twenty-three, Arthur K. Stone, Chairman, charged not with the legislative end so much as with that broad study of the question which is the present need.

We ask our discharge on the ground that we are no longer needed and have done our work.

F. J. CORTON, *Chairman*.

REPORT OF THE COMMITTEE OF 23 ON HEALTH INSURANCE.

Your Committee met on March 13, 1917, and chose Dr. A. K. Stone of Boston, Chairman, and Dr. Peer P. Johnson of Beverly as Secretary. Since the appointment of the Committee which was ordered by a vote of the Council at the meeting held February 6, 1917, the United States has declared war against Germany. In consequence of the entrance of the United States into the fearful European contest, medical men have been called upon as never before to consider questions relative to medical military preparedness and to the care of our vast army and navy in action. So great has been this demand for medical officers for the war that it has been intimated in some quarters that there is a great possibility that there will be a shortage of medical men. Therefore it seems fitting that all those questions that do not clearly bear on medical military preparedness should be held in abeyance until after the war and, again, social conditions will certainly be changed after the war, and legislation that would apply to peace conditions would not apply to war conditions, or to conditions immediately after the close of the war. We would recommend that the Council oppose any comprehensive social insurance plan until after the war. The legislative situation of the question of Health Insurance is as follows: The Recess Commission on Social Insurance rendered their report to the legislature in March. The report can be found in House Document No. 1850. The report of the Commission was not unanimous. Four members reported in favor of Health Insurance, and a plan for carrying out their recommendations. One commissioner agreed to the plan of these four, but did not give his approbation on account of the enormous expense involved. Two other members thought it was not the proper time to carry out any plan until further information was obtained and public opinion found on the subject. Another group of two members reported in the following, in part: "We do not advocate immediate legislation for Health Insurance because this Commission has not had sufficient time to study the subject thoroughly." A single member makes this remark in his report: "I recognize that without further study and investigation, the adoption of all the measures presented by the majority of the members of this Commission, within the limited and absolutely inadequate time at our disposal, would shake the foundation of our social, political and financial structure. In other words, I regret that all their efforts have been devoted to building an alluring superstructure with very little consideration given to the foundation."

Even though I am in absolute sympathy with the object that is desired to be obtained, I maintain that no legislation on this matter is preferable, by far, to ill-timed, poorly considered and hastily drawn legislation which leads—no man knows where. Thus we have one report from the Commission and three statements explaining the report and a statement from one member dissenting from the views of all the others. The House received this report and placed it on file. The Committee on Social Welfare of the Massachusetts Legislature of 1917 held many hearings on the question of Social Insurance and especially on the consideration of the Young Bill, so called. The result of their deliberation was to recommend to the Legislature that a new recess commission be appointed to consider the matter of Social Insurance. This Commission is to consist of three members of the Massachusetts Senate and appointed by the President of the Senate, six members of the Massachusetts House of Representatives, to be appointed by the speaker of the House, and two members of the Commission to be appointed by the Governor. The Governor has not yet appointed the two members, consequently the commission has not been organized. Your Committee feels that it ought to secure a paid agent,

preferably a stenographer. They feel further that it may be necessary to hold meetings in various parts of the Commonwealth for the purpose of securing information at first hand concerning the medical problems peculiar to the locality. We feel further that it be necessary that our agent should attend all meetings of the Commission and report frequently to your Committee concerning the matter of Health Insurance. Such information as we need for the proper study of this whole thing cannot be had by voluntary work. The personnel of your Committee will be sufficient guarantee that any funds intrusted to their care will be judiciously expended.

CHARLES E. MONGAN,
For the Committee.

REPORT OF THE COMMITTEE ON WORKMEN'S COMPENSATION ACT.

The Committee of five appointed at the last annual meeting of the Society was enlarged at the fall meeting of the Council by the addition of members from practically every district in the state. That Committee met as a whole, every month so far as possible, and the smaller Executive Committee had weekly meetings throughout the fall and winter.

In each district an Auxiliary Committee was asked for, and these Committees formed a valuable adjunct to the smaller Committee.

A great deal of work was done, and the Committee had the cordial support of all the profession throughout the state. After the experience of this campaign, one thing remains perfectly clear: That any attempt to influence legislation involving such far-reaching changes as were accomplished this year, would be utterly hopeless without the expert advice such as the Committee had in Mr. A. N. Frost of Lawrence, who acted as legislative agent for the Society. The amendment to the Compensation Act would have been defeated at every turn without this assistance.

Changes in the personnel of the Industrial Board and its enlargement will be of interest to the Society in the administration of the new law. That an aggressive attack will be made against the law from all quarters is to be expected, and it is essential that the Massachusetts Medical Society continue its watchful care in safeguarding the interests of the profession just as intently next year as it has the past year.

In conclusion, in appending the chairman's letter to the Boston Medical and Surgical Journal, to be incorporated as a part of this report, the chairman wishes to express his sincere thanks to the president of the Society, to the Committee on State and National Legislation, and to all the auxiliary committees who have given us continuous and painstaking support throughout the year. To those members of the Committee who were actively associated through all the campaigns, no other thanks are necessary than to have successfully won the fight. At the same time, the chairman feels under lasting obligation to them all.

ARTHUR N. BROUGHTON, *Chairman.*

(Copy of letter to the Editor of the Boston Medical and Surgical Journal.)

Mr. Editor:

At midnight of April 23 the bill to amend the Workmen's Compensation Act, introduced by the Massachusetts Medical and Homeopathic Medical Societies, became a law, and without the Governor's signature. The final form in which the law was passed is as follows:

"Chapter seven hundred and fifty-one of the acts of the year nineteen hundred and eleven, as amended by section one of chapter seven hundred and fourteen, is hereby amended by striking out section five

of Part II as amended and inserting in place thereof the following new section: *Section 5.* During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the board, for a longer period, the association shall furnish adequate and reasonable medical and hospital services, and medicines, when they are needed. The employee shall have the right to select a physician other than the one provided by the association and in the event that he shall be treated by a physician of his own selection, or where, in case of emergency or other justifiable cause, a physician other than the one provided by the association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the association, subject to the approval of the Industrial Accident Board. Such approval shall be granted only if the board finds that the employee was so treated by such physician, or that there was such emergency or justifiable cause, and, in all cases, that the services were adequate and reasonable and the charges reasonable."

The passage of this law marks one stage in the fight to correct the injustice and ineffectiveness of the Workmen's Compensation Act as it stood for four years. The principles involved concern not only the physicians throughout the state, but every workman, every employer of labor, and very many large insurance companies. The passage of the amendment through the legislature was of great interest. The only open opposition to the bill was of some large interests in Worcester and Boston. In contrast to this, the bill had the support, not only of the medical societies but of all the various labor organizations and very many employers. The Chairman of the Industrial Accident Board stated at the hearing that the doctors were entitled to relief. The insurance companies offered no open opposition. The bill had a unanimous report from the Joint Judiciary Committee. It went through the three readings of the House with no apparent opposition, and it was not until the third reading in the Senate that any marked attempt was made to defeat the bill. In this instance, the opposition was originated almost entirely at a single source. That same opposition was met when the bill was finally given to the Governor for his signature. It is a matter of regret that the bill had to become law, as it did, without the signature of the Governor. It is not clear how a bill which had the support of all the physicians, of all the workmen, of many employers, and with so little open opposition, could have failed to have the support of the Governor.

The law as it now stands is not perfect, but it is a marked improvement actually for all concerned, compared with the law as it stood. The chief beneficiaries under it will unquestionably be the workmen; but the entire economic situation, we believe, will be improved by compelling good medical service to be rendered in the case of accident, however and wherever it is furnished.

Two important duties now lie before the physicians of the state: In the first instance, it is imperative that the profession as a whole emphasize the sincerity of their contentions by the most scrupulous care in their conduct of all industrial cases, both in their medical and financial relations to the case. One of the greatest dangers to be encountered would be the unfair exploitation of the law in securing undeserved remuneration or in any way becoming objects of deserved criticism at the hands of those who must administer the law. The second duty, also of great importance, is the recognition of the fact that already a powerful opposition is being organized to attack the law and repeal it or seriously cripple it at the next session of the legislature. The profession throughout the state must continue their defense of the justice of the law as it now stands and cooperate in protecting it. It would be a great discouragement

to the committees of the two societies that have worked so hard to bring this change about, to have its work all undone either by a lack of continuous and aggressive coöperation on the part of the profession or disloyalty in the performance of its duties under the law, to those principles of honesty and fairness which in reality are the fundamentals of the ethics of the practice of medicine. To justify the work on behalf of this new act we must work together and in the spirit of fair play in which the amendment to the Compensation Act was drawn.

ARTHUR N. BROUGHTON, *Chairman*.

NOTES FROM THE DISTRICT MEDICAL SOCIETIES.

HAMPSHIRE.—The following fellows attended the annual meeting of the A. M. A. in New York City: Dr. Chas. E. Perry, Dr. A. G. Minshall, Dr. J. G. Hanson, Dr. F. E. Dow, Dr. C. R. Gardner of Northampton; Dr. A. J. Bonneville of Hatfield; Dr. D. M. Ryan and Dr. W. W. Miner of Ware.

Dr. W. J. Collins and Dr. J. D. Collins have been commissioned 1st Lieutenants in the Medical Reserve Corps of the Army, and will report for training at Fort Benjamin Harrison, Indiana, on June 16.

E. E. THOMAS, M.D., *Correspondent*.

Harvard Medical School.

DEPARTMENT OF PREVENTIVE MEDICINE AND HYGIENE

THE Department of Preventive Medicine and Hygiene of the Harvard Medical School, under the auspices of the National Academy of Sciences, is conducting a special investigation of so-called ptomaine poisoning and gastro-intestinal infections suspected of being due to food. This investigation will be continued for a period of several years.

It is of the utmost importance for the success of this investigation to obtain the active interest and hearty coöperation of the practising physicians of Massachusetts. To this end it is urgently requested that the Department be notified *immediately* concerning any case of suspected food infection or poisoning. The Department is prepared to send out field investigators to study such outbreaks and to collect the necessary specimens for laboratory examination. All expense connected therewith will be borne by the Department, and complete reports will be made to the proper authorities on request.

It is especially important that notification be given immediately and that any material which may help in tracing the infection, such as suspected food, vomitus or faeces be collected as soon as the condition is suspected. The telephone number is Brookline 2380.

Miscellany.

RESOLUTION ADOPTED BY THE LYNN MEDICAL FRATERNITY AT A MEETING HELD JUNE 7, 1917.

Whereas our nation is at war, and urgent appeals have been made for physicians to join the Army Medical Corps or other branches of our fighting forces, and in expectation that many of our loyal physicians will respond to their country's call in the face of national danger, therefore, be it resolved: That the practicing physician of Lynn, Swampscott, Nahant and Saugus agree to attend to the practice of any physician who may be absent on war duty according to the following arrangement:

One-half of the entire amount collected from the practice of an absentee, with the exception of Lodge Work, shall be paid to such one of the absentee's dependents as said absentee shall designate to the secretary of the Lynn Medical Fraternity. Amounts due to absentees' dependents shall be paid monthly.

A physician working under this agreement further agrees not to visit professionally any of absentee's patients whom he may have attended during the absence of said absentee for at least six months after the return of said absentee without the consent and approval of absentee.

And further it is resolved:

That this agreement shall be signed by all the physicians as an earnest of their intention to abide by it, and that the agreement and the signatures shall be published in the daily papers and the public be notified by this statement that patients of absentees should inform the substituting physician that they are patients of absentee.

ORGANIZATION OF AMERICAN BASE HOSPITAL UNITS.

THE issue of the *British Medical Journal* for June 2 publishes the following description of the American Base Hospital Units, which have already arrived in England for war service.

"The six medical units from the United States which are to take over base hospitals in France will, it is expected, all have arrived before the end of this week. The unit from the Western Reserve University, Cleveland, some particulars of which were given in the last issue, was followed quickly by units from Harvard (Boston) and Columbia (New York), both of which have already left London for the Continent, and these by units from St. Louis, Philadelphia, and Chicago. The Harvard unit, whose official title is United States Army Base Hospital No. 5, was organized under the American Red Cross by Professor Harvey Cushing. It consists, like the others, of three members of the administrative

staff taken from the medical corps of the regular army, namely, Major Robert U. Patterson, commanding, Captain D. W. Harmon, adjutant, and Captain Charles Rund, quartermaster. The professional staff, in addition to Major Harvey Cushing, includes Major Roger I. Lee, professor of hygiene at Harvard, and Major Robert B. Osgood, professor of orthopedics, together with five officers holding the rank of captain and sixteen that of first lieutenant. Among the latter is Dr. W. B. Cannon, professor of physiology at Harvard. The staff includes an anesthetist, a radiologist, two dental surgeons, and other specialists, including a dentist. The hospital company consists of 16 orderlies from the medical department of the regular army and 132 specially enlisted men, 65% of whom are Harvard students. The nurses number 64, and there are three secretaries. All have 'signed on' for the duration of the war.

"The Columbia unit, whose official title is United States Army Base Hospital No. 2, is commanded by Major L. L. Hopwood, with Captain Edward Wells as adjutant, and Captain D. F. Hopkins as quartermaster. The director of the professional staff is Major George E. Brewer, professor of surgery at Columbia and surgeon-in-chief of the Presbyterian Hospital, New York City. The chief of the surgical service is Major William Darrach, and of the medical, Major Homer Swift, and the number and assignments of the unit are virtually the same as in the case of Harvard and the others.

"The fourth and fifth contingents to arrive were the Washington University unit (Base Hospital No. 21) from St. Louis, and the Pennsylvania Hospital unit (Base Hospital No. 10) from Philadelphia. The sixth and last contingent, from Chicago, was expected at the end of this week. In all these cases the organization is practically the same as in the Western Reserve, Harvard, and Columbia units already described, save that the St. Louis unit has a feature which, so far as our information goes, is peculiar to itself. Arrangements have been made for those of the enlisted men from St. Louis who are medical students to continue their studies while serving with the unit. There are thirteen of these at present, but the number is expected to reach thirty-five by next January. Washington University has recognized the professional staff as a teaching faculty, and has arranged to substitute the work with the unit for the fourth year in the medical school; the university teaching, both in medicine and surgery, will be carried out in France. This unit is commanded administratively by Major James D. Fife, with Captain Thomas C. Austin as adjutant and Captain G. S. Kopple as quartermaster. The director of the professional staff is Major F. T. Murphy, professor of surgery at Washington University, and the assistant directors are Major Walter Fischel, associate professor of medicine, and Major Malvern B. Clopton, associate pro-

fessor of surgery. The assistant director of the laboratory service is Captain Eugene L. Opie, who is professor of physiology, and the staff includes Captain Allison, Captain Veeder, and Captain Sidney Schwab, associate professors, respectively, of clinical orthopedic surgery, pediatrics and neurology. All the members of the professional staff are attached to the Barnes Hospital and the Children's Hospital, St. Louis, both of which are integral parts of Washington University. The commissioned officers number twenty-eight in all. The chief of the sixty-five nurses is a lady well known among the social workers and educationalists of America—namely, Miss J. C. Stimson, niece of a distinguished American surgeon. The enlisted staff embodies about 160 men.

"The Pennsylvania unit is the only one of the six which is not attached to a university; its members are part of the staff of Pennsylvania Hospital in Philadelphia. Major De Laney is the commanding officer and Major Richard Harte the professional director. Like the Harvard and Washington units, this group includes a chaplain.

"The unit from Pennsylvania Hospital, Philadelphia—the oldest hospital in the United States—is commanded by Major M. A. De Laney, with Captain N. L. McDiarmid as adjutant and Captain H. L. Kidwell as quartermaster, all of the medical corps of the United States army. The director is Major Richard H. Harte, surgeon to the Pennsylvania and Orthopedic Hospitals, Philadelphia; with Major H. Gibbon as chief of the surgical service and Major George W. Norris as chief of the medical service. All the professional staff are graduates of the University of Pennsylvania, with the exception of Major Gibbon. The hospital company includes 156 men and 64 trained nurses.

"Another unit of medical men to arrive this week consists of twenty orthopedic surgeons, in charge of Major Joel E. Goldthwait. These surgeons are from various parts of the United States and have come over at the request of Colonel Robert Jones for work at present in the British Isles.

"Major Brewer gave a representative of the *British Medical Journal* some details of the origin and standing of these units, and these were supplemented by Major Patterson, of the Harvard unit, who has been first assistant to Colonel Jefferson R. Kean, of the medical corps of the United States army, to whom the development of the organization of these base hospitals by the Red Cross is due. The idea was originated by Dr. George W. Crile, now the director of the Western Reserve unit, as a result of his experiences in the Spanish-American war, and was brought to fruition by Colonel Kean. The United States Government has no authority to organize military medical units in time of peace, but by a presidential proclamation in 1911 the Red Cross was authorized to act as a Govern-

ment agent to prepare in advance certain hospital units composed of medical men and nurses and, as far as possible, of orderlies, laboratory assistants, and administrative staff, who had been working together in similar relative capacities in some large hospital. These were organized under the Red Cross, and each member signed a pledge to hold himself or herself in readiness to respond to any call by the Government on a declaration of hostilities. During hostilities, or when these are imminent, the units can be enlisted as regular military organizations under the sole control of the War Department, and each of the medical officers of the unit must be a member of the medical reserve corps. This arrangement was designed to make well-organized hospital units immediately available for service in the base hospitals in time of war, and to avoid the necessity of calling together men from different parts of the country who had had no previous association. Major Brewer stated that the units, most of which are organized from hospitals attached to university medical schools, now number thirty-eight, and during the past year each of these units has been supplied with a full hospital equipment, including beds, bedding, linen, instruments, hospital furniture, x-ray and laboratory apparatus, and a supply of surgical appliances and dressings enough to last for two months' active service. When these units are called out the War Department furnishes three officers from the regular army to take charge of the administration of each of them, while the professional personnel remains under the director who has been at the head of the unit from the first, and with him are two sub-directors, one to superintend the surgical, and the other the medical, service. The staff includes a chief of laboratory service, a competent pathologist, a bacteriologist, and a number of laboratory technicians, each group has also an orthopedic surgeon, a neurologist, an ear, nose, and throat specialist, and a radiologist, all of them, as far as possible, from the teaching staff of the university medical school. By thus putting into active service a 'team' of men who have already been accustomed to work together, it is believed that the best technical results can be obtained. The Columbia unit, for example, consists of doctors and nurses who have been working together at the Presbyterian Hospital in New York in the same capacities as those to which they are now assigned.

"At the request of the British Commission, which recently visited Washington, six of these thirty-eight hospital units have been lent to the British Government with a view to releasing the staffs already at the base hospitals. As originally organized, the unit, when called out, intended to carry its own complete equipment, but as these six units were requested to take over six general hospitals already in being, only some special instruments, and not the full equipment, have been brought across the Atlantic. Major

Brewer also indicated an interesting development for the immediate future. For some time it has been planned by the National Red Cross of America to provide each of these units with a complete set of hospital buildings of the portable house type. The plans were formulated by Dr. Sidney A. Burnap, a member of the Columbia unit, and have been approved by the Council of National Defense. Through the generosity of a New York philanthropist orders have been given for the construction of a set of hospital buildings capable of accommodating 500 patients, staff, and administrative personnel, and including operating theatre, kitchen, laundry, heating, lighting, and disinfecting plant, sewerage system, and all labor-saving devices on the most up-to-date lines. Between forty and fifty buildings (forming one set) are now being constructed on this portable plan, capable of being erected and made ready for use within two or three weeks, so as to form a base hospital; when this model building is completed it will be placed on exhibition, either in one of the parks of New York or at one of the military concentration camps, and if it proves as satisfactory as expected, the Government will probably order ten or more of these groups of buildings to be constructed for base hospital use with the first expeditionary force to Europe.

"In the official summary, issued on May 29, of what the United States has accomplished during the seven weeks which have elapsed since it entered the war, it is stated that ten thousand doctors, in addition to many nurses, have been ordered to England and France. As the bill which is to be put into force forthwith will provide an army of 2,000,000 men, this is at the rate of one doctor to 200 men. It is, however, anticipated that not more than 100,000 Americans, all told, will be available in France at an early date, and it is to be assumed that all the ten thousand doctors will not come to Europe before the main American forces reach this country."

APPEAL FOR RED CROSS VOLUNTEERS.

WITH the removal of the Red Cross Supply Service from Washington Street to the corner of Columbus Avenue and Berkeley Streets, Mr. Grandin, manager, issues the following statement in appealing for volunteer service.

"The general purpose of the Supply Service is to keep on hand all the standard material that the patriotic people of New England may require in connection with the work of making Red Cross surgical dressings and hospital supplies. This is an emergency service, however, and Red Cross chapters, branches, or any relief organizations having satisfactory dealings with local mills and retailers, are advised to continue

their present connections, thereby retaining the incidental good will in the interest of the Red Cross, rather than to sever such connections and purchase entirely from the Supply Service. When, however, local supplies are scarce, or prices unsatisfactory, all Red Cross chapters, branches or auxiliaries at large, or any other accredited relief associations, are most welcome to purchase from us direct, and we shall make a special effort to ship promptly.

"All Red Cross supplies from Maine, New Hampshire, Vermont, Massachusetts and Rhode Island, which include surgical dressings as well as hospital supplies, such as surgical shirts, pajamas, convalescent gowns, bed linens, towels, etc., should be shipped to the Red Cross Supply Service, 142 Berkeley Street, Boston, at which point they are inspected, repacked into standard boxes and hurried forward, in accordance with instructions from Washington.

"It is quite evident that in order to inspect the shipments which are coming to us from the generous people of New England (as we handle all the territory of New England save that of Connecticut), that we require the assistance of a large force of volunteer workers who, under the guidance of the heads of the several departments, can render valuable service in inspection and correction, by coming to 142 Berkeley street.

"This is an earnest appeal for volunteer service. We need not less than one hundred women every day in the week. Enlist now."

Correspondence.

A CORRECTION.

Boston, June 9, 1917.

Mr. Editor:

In the article on Dr. Withington in the BOSTON MEDICAL AND SURGICAL JOURNAL of June 7th there is the following: "the first use of diphtheria antitoxin in the Boston City Hospital, which was in his service, on Dec. 12th, 1894."

I believe this is a misapprehension, as I had been using at this hospital a portion of a supply of antitoxin, which came to me from Dr. von Behring, before this date.

So far as I am aware, my patients were the first to have diphtheria antitoxin in this community, and the opposition to its use I sometimes found it difficult to overcome.

One of my articles on this subject was published in the BOSTON MEDICAL AND SURGICAL JOURNAL on December 20th, 1894. Dr. Withington's article appeared on March 14th, 1895.

Very truly yours,

FRANCIS H. WILLIAMS.

MASSACHUSETTS COMMITTEE FOR THE STATE CARE AND TREATMENT OF SOLDIERS SUFFERING FROM NERVOUS AND MENTAL DISEASES.

64 Beacon St., Boston, June 22, 1917.

Mr. Editor:—

A letter has just been received by our National Committee for Furnishing Hospital Units for the Care of Soldiers and Sailors Suffering from Mental and Nervous Disorders to the United States Government from Dr. Thomas W. Salmon, Medical Director of the National Committee for Mental Hygiene, extracts of which may be of interest to the readers of the JOURNAL.

Dr. Salmon has been sent by the Rockefeller Foundation to England and France for the purpose of studying conditions there relative to the care and treatment of nervous and mental diseases in this war. Under date of June 1, 1917, he writes from London:

"In the first place, I am convinced we are providing far too few beds for actual war conditions. This is entirely true of base hospitals generally, but it is especially true of the accommodations for mental and nervous cases. A British army division consists of 40,000 men, and has a base hospital of 1000 beds, which can be expanded to twice that number. This ratio is considerably larger than that provided by the United States regulations.

"The extent of the nervous and mental casualties is almost beyond belief. I have not yet had access to the official records, but apparently the neuroses constitute one of the most formidable problems of modern war. I shall have innumerable instances, showing how ineffective ordinary treatment is in these cases, and how much can be accomplished from sufficient treatment, by psychiatrists and neurologists, when they have early access to their patients, and some special facilities.

"The little I have already learned has convinced me of the importance of excluding certain easily recognizable psychiatric types at the time of their enlistment. Dr. Mott, who has had enormous experience here, says that he cannot emphasize this too strongly. These people are certain to go to pieces in the presence of danger or hardship, and are not only useless themselves, but are also a serious drag upon their comrades and the army in general. Mott believes that no testing methods can detect these individuals, but that their exclusion must depend upon the expert clinical judgment of the well-trained psychiatrists and neurologists."

Very sincerely yours,

L. VERNON BRIGGS,
Secretary, Massachusetts
Committee, and Member
of the National Committee.

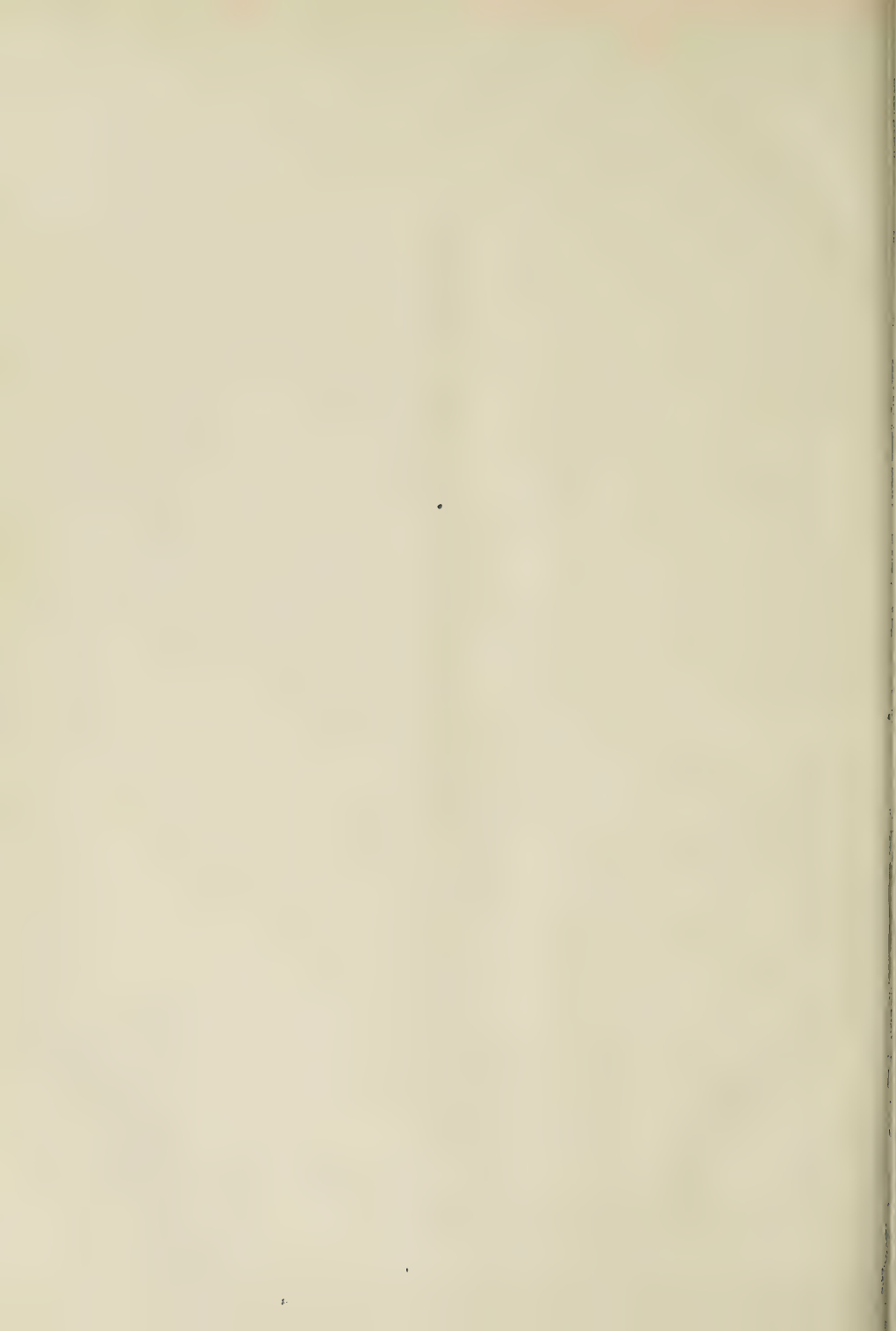
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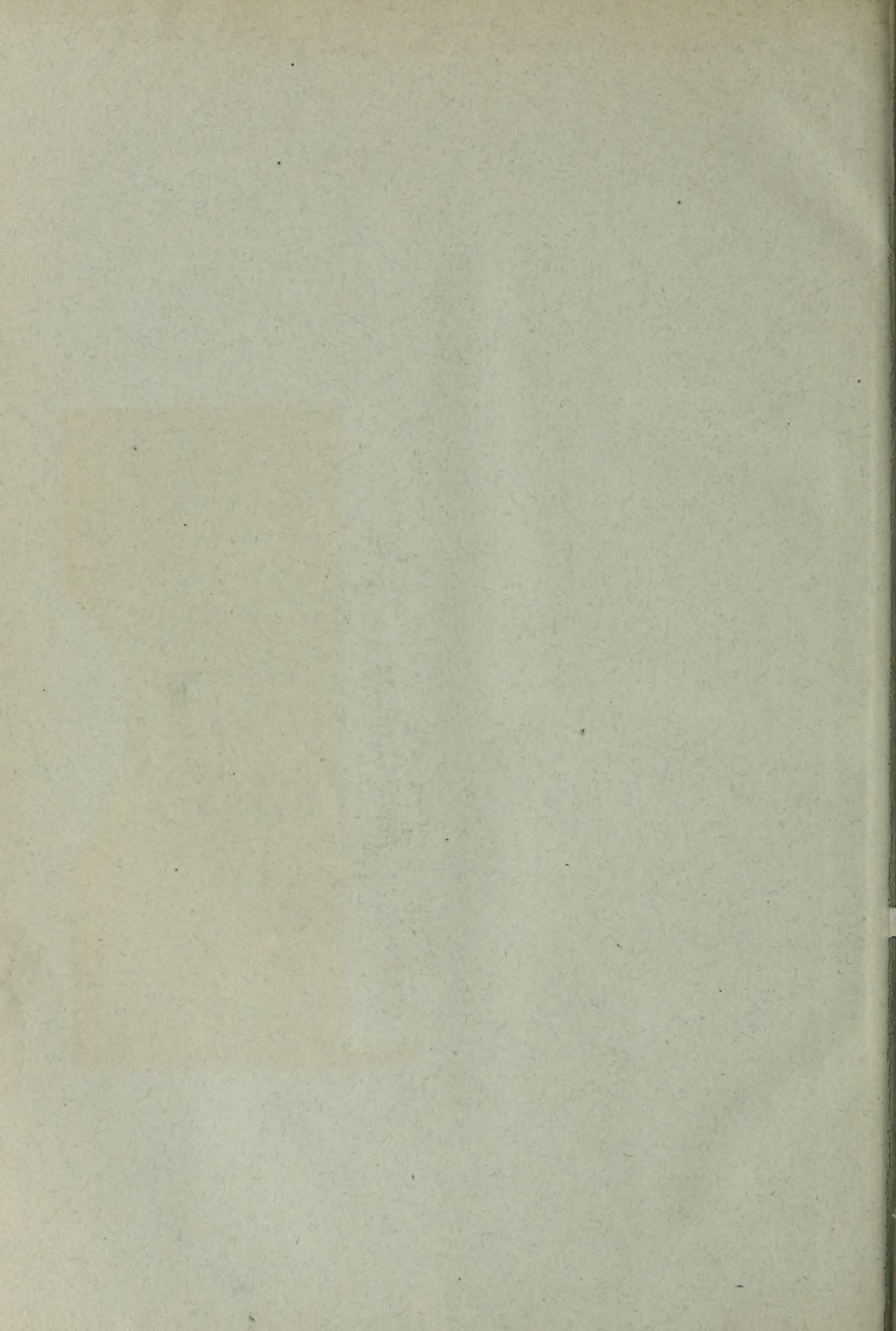
BOSTON CITY HOSPITAL.—Dr. John M. Woodside has been appointed to the position of supply assistant at the City Hospital, Boston.

MASSACHUSETTS COMMITTEE FOR PUBLIC SAFETY.—Dr. Allan J. McLaughlin has been appointed to succeed Dr. Richard P. Strong of Boston, as chairman to the subcommittee on hygiene, medicine and sanitation of the Massachusetts Committee for Public Safety.

RECENT DEATHS.

BURNSIDE FOSTER, M.D., died at St. Paul, Minn., on June 13. He was born in Worcester, Mass., and graduated from Yale University in 1882 and Harvard Medical School in 1886. He studied abroad and on his return settled in practice in St. Paul, Minn., where he had remained ever since. He is survived by his widow and three children.





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